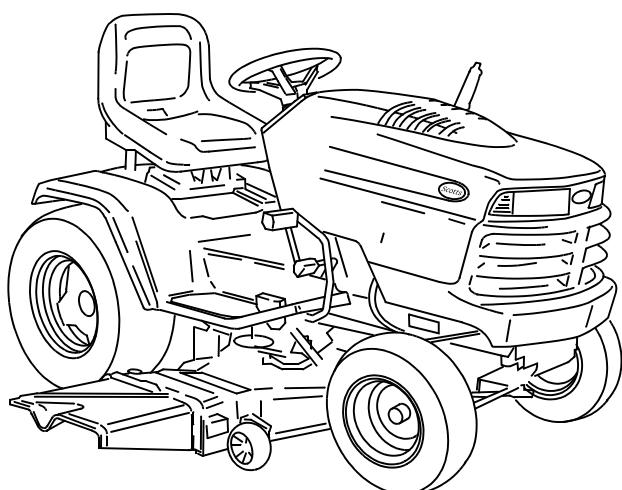


S2048 Yard Tractor and S2554 Garden Tractor

Serial No. (020,001-)



OPERATOR'S MANUAL



OMM141709 H9

North American
Litho in U.S.A.

English

INTRODUCTION

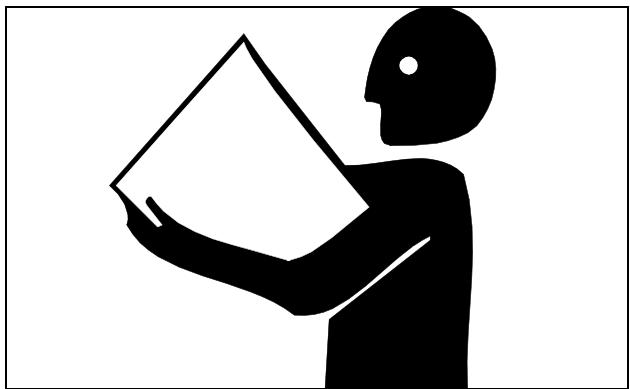
THANK YOU for purchasing a Scotts product.

Read this manual and your attachment manual thoroughly. Failure to do so could result in personal injury or equipment damage.



WARNING: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

CALIFORNIA Proposition 65 Warning



This manual should be considered a permanent part of your machine and should remain with the machine when you sell it.

Measurements in this manual are metric units and their U.S. customary equivalents. RIGHT-HAND and LEFT-HAND sides are determined by facing in the direction the machine will travel when going forward. When you see a broken line arrow (----->), it indicates the part it is pointing to is hidden.

Record identification numbers below. Be sure to record all the numbers to help in tracing the machine if it is stolen. You also need to give these numbers to your dealer when you order parts.

DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:

**TRACTOR SERIAL NUMBER (A),
(Located on rear of tractor):**

**ENGINE SERIAL NUMBER (B),
(Located on engine):**

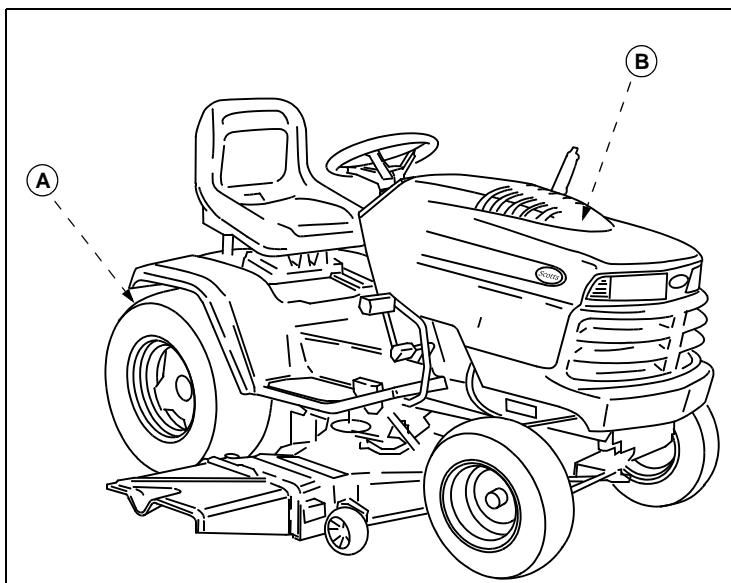


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All information, illustrations and specifications in this manual are based on the latest information at the time of publication. The right is reserved to make changes at any time without notice.

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NOTES

ASSEMBLY

Identify Parts

Clear Plastic Bag Contains:

- Scotts Operator's Manual
- Safety Video
- Warranty Cards

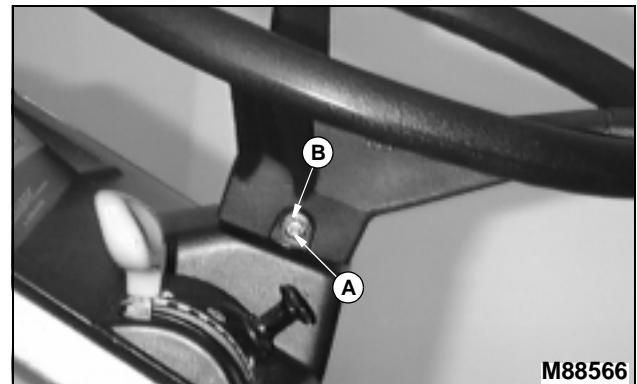
Bag of Parts Contains:

- Hardware for Steering Wheel
- Hardware for Battery Cables
- Key Chain
- Padded Key

NOTE: There is an extra ignition key strapped to one of the seat suspension springs.

Install Steering Wheel

1. Put front wheels in the straight forward position.
2. Lubricate the steering shaft.
3. Install steering wheel with logo in the upright position.
4. Install shoulder bolt (A). Drive bolt in until head of bolt contacts steering wheel.
5. Install washer and nut (B).
6. Tighten lock nut until it is snug. Do not tighten lock nut to pull washer or head of bolt into steering wheel.



M88566

ASSEMBLY

Add Electrolyte To Battery



CAUTION: Avoid injury, battery acid is a poison and could cause burns. Avoid contact with skin, eyes and clothes. DO NOT drink battery fluid. Battery gasses can explode. Keep cigarettes, sparks, and flames away from battery.

IMPORTANT: Avoid machine damage from spilled electrolyte. Battery should be removed from tractor before filling it with electrolyte.

1. Use only battery-grade sulfuric acid electrolyte with 1.265 specific gravity.

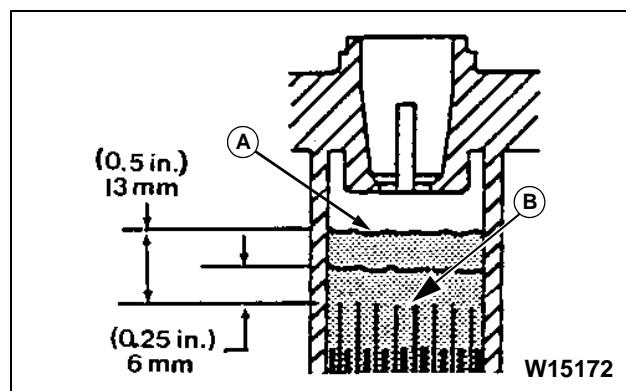
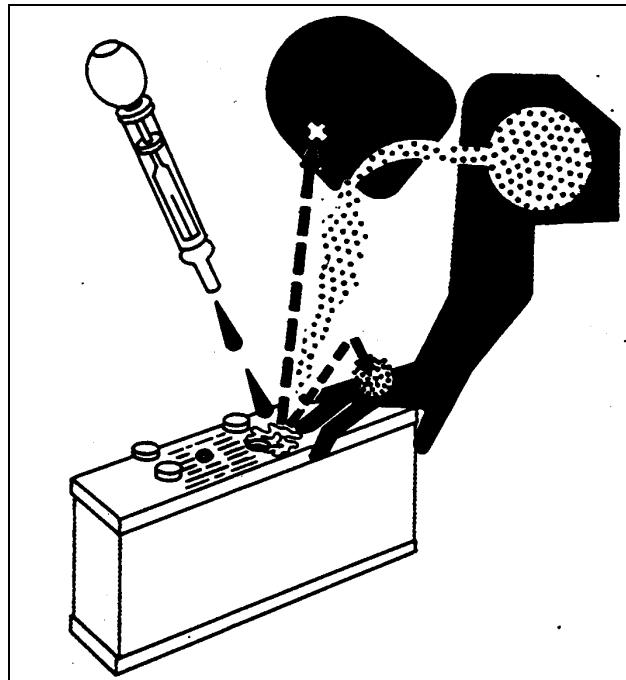
NOTE: *Some batteries may have shipping caps remove and discard these caps*

2. Remove battery caps.
3. Slowly add electrolyte (A) until plates (B) are just covered.



CAUTION: Avoid injury from acid burns. After battery is activated, the gases in the battery are explosive. Keep sparks and flames away from battery, especially when charging battery.

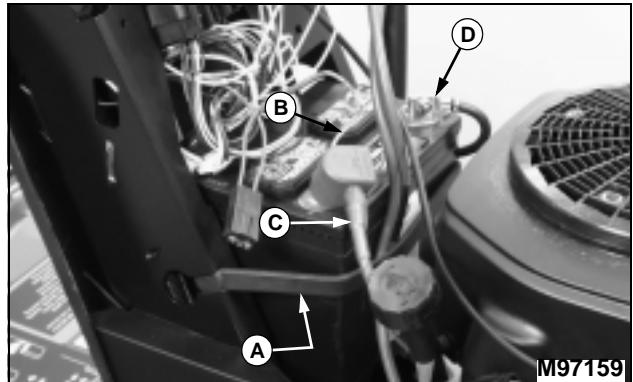
4. Charge battery at 15 amps for 10 minutes or 7 amps for 30 minutes. DO NOT exceed recommended charging rate. If electrolyte starts to boil over, decrease charging rate. (See Charging Battery in the Service Electrical section.)
5. After charging, add electrolyte until level is 6 - 13 mm (0.25 - 0.5 in.) above plates.
6. Install vent caps.



ASSEMBLY

Install and Connect Battery

1. Install battery and secure with hold-down strap (A)
2. Remove and discard the RED positive (+) protective cap from the positive (+) battery terminal.
3. Connect blue harness wire (B) and RED positive (+) cable (C) to battery. Apply petroleum jelly or silicone spray to terminal to prevent corrosion. Make sure connection is tight. Install the red terminal cover.
4. Remove and discard the BLACK (-) protective cap from the negative battery terminal.
5. Connect black negative (-) cable (D) to battery. Apply petroleum jelly or silicone spray to terminal to prevent corrosion. Make sure connection is tight.

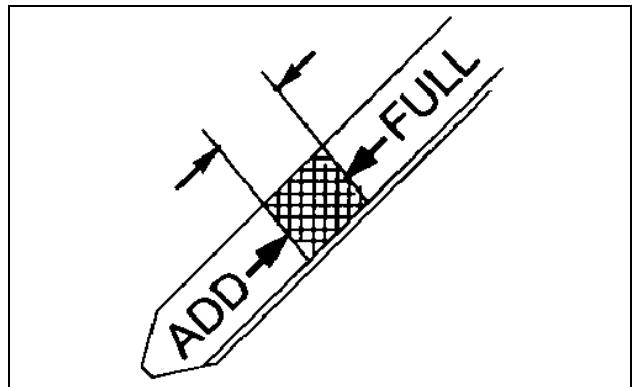
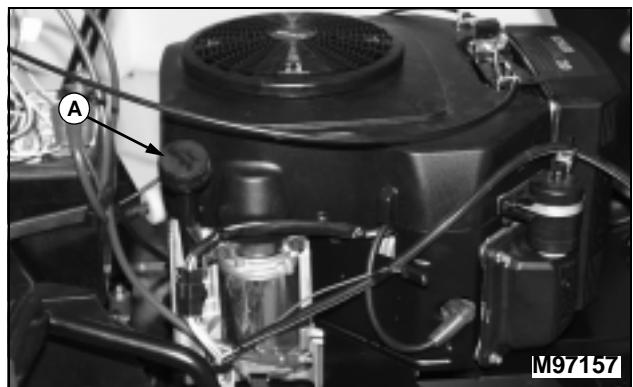


Check Engine Oil

IMPORTANT: Avoid machine damage. DO NOT run engine if oil level is below ADD mark.

Picture Note: Model S2048 used for photo purposes.

1. Lift hood.
2. Remove dipstick (A). Wipe with clean cloth.
3. Insert the dipstick into the tube and rest the oil fill cap on the tube. Do not thread the cap onto the tube.
4. Remove dipstick to check oil level.
5. Oil must be between ADD and FULL marks.
6. Add oil to FULL mark if necessary. DO NOT overfill. (See Engine Oil in Service Engine section.)
7. Install and tighten dipstick. Lower hood.



ASSEMBLY

Break-In Electric PTO Clutch

Picture Note: Model S2554 used for photo purposes.

1. Start engine and push throttle lever (A) up to full throttle (r) position.
2. With no load on mower, ENGAGE PTO (B) and allow mower to run for 10 seconds.
3. DISENGAGE PTO and wait 10 seconds.
4. Repeat Steps 2 and 3 for 12-15 cycles.
5. PTO clutch is now properly burnished.



Check Machine Safety System

Perform safety system check to make sure the electronic safety interlock circuit is functioning properly. Perform all six Tests. (See Testing Safety System in the Operating section.)

ASSEMBLY

Checking Tire Pressure



CAUTION: Avoid injury Explosive separation of a tire and rim parts can cause serious injury or death:

- Do not attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



1. Check tires for damage.
2. Check tire pressure with an accurate gauge.
3. Add or remove air, if necessary:

Tire Size	Pressure
Model S2048: Front = 16 x 6.5 x 8 Rear = 23 x 9.50 x 12	97 kPa (14 psi) 83 kPa (12 psi)
Models S2554: Front = 16 x 7.5 x 8 Rear = 24 x 12 x 12	83 kPa (12 psi) 69 kPa (10 psi)

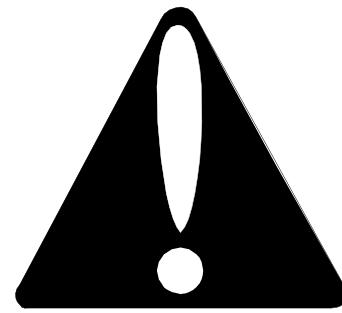
SAFETY SIGNS

Safety-Alert Symbol

Read and recognize safety information. Be alert to the potential for personal injury when you see this safety-alert symbol.

On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety-alert symbol. DANGER identifies the most serious hazards.

In this manual, the word CAUTION and this symbol call attention to safety messages.



Machine Safety Labels

DANGER: ROTATING BLADES CUT OFF ARMS AND LEGS

- Do not mow when children or others are around
- Do not mow in reverse
- Look down and behind before and while backing
- Never carry children

WARNING: AVOID SERIOUS INJURY OR DEATH

- Drive up and down slopes, not across
- Avoid sudden turns
- If machine stops going uphill, stop blade and back down slowly
- Keep safety devices (guards, shields, and switches) in place and working
- Read operator's manual
- When leaving machine:
 - Stop engine
 - Set park brake
 - Remove key



SAFETY SIGNS

WARNING: LOADED SPRING

Picture Note: One decal on each side of tractor frame.

LOCK LIFT LEVER FORWARD BEFORE CHANGING ATTACHMENTS



M97152

BATTERY LABELS - DANGER / POISON

SHIELD EYES.

EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.

NO

- SPARKS
- FLAMES
- SMOKING

SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS

KEEP OUT OF THE REACH OF CHILDREN. DO NOT TIP. KEEP VENT CAPS TIGHT AND LEVEL.

FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.

CAUTION - FOR SAFE JUMP STARTING FOLLOW INSTRUCTIONS IN VEHICLE OWNERS MANUAL. IF NOT AVAILABLE SEEK SERVICE ASSISTANCE



M97152

SAFETY SIGNS

DANGER: ROTATING BLADE

DO NOT PUT HANDS OR FEET UNDER OR INTO MOWER WHEN ENGINE IS RUNNING

THROWN OBJECTS

BEFORE MOWING, CLEAR AREA OF OBJECTS THAT MAY BE THROWN BY BLADE

DO NOT OPERATE MOWER WITHOUT DISCHARGE CHUTE OR ENTIRE GRASS CATCHER IN PLACE



DANGER: ROTATING BLADE

Picture Note: Located on Left-Hand side of deck.

DO NOT PUT HANDS OR FEET UNDER OR INTO MOWER WHEN ENGINE IS RUNNING



Certification Label

This OPEI label on your mower indicates that this model has been certified by an independent laboratory for compliance with American National Standard B-71.1-1998, "Safety Specifications" for Power Lawn Mowers, Lawn and Garden Tractors, and Lawn Tractors.

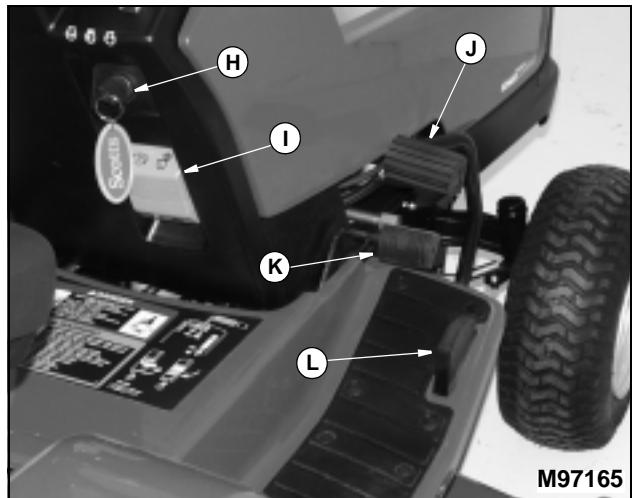
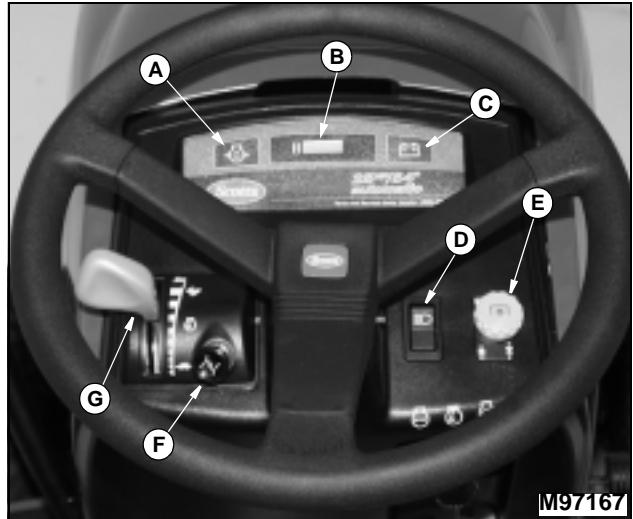


CONTROLS

Controls

Picture Note: Model S2554 used for photo purposes.

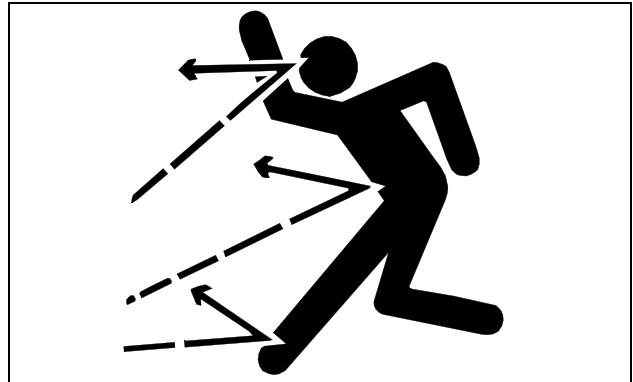
- A - Engine Oil Pressure Light (Model S2554 Only)
- B - Hour Meter (Model S2554 Only)
- C - Battery Discharge Light
- D - Light Switch
- E - PTO Switch/RIO Switch
- F - Choke Knob
- G - Throttle Lever
- H - Key Switch
- I - Park Brake Lever
- J - Brake Pedal
- K - Forward Travel Pedal
- L - Reverse Travel Pedal
- M - Mower Deck Lift Lever
- N - Cut Height Adjustment Lever



OPERATING MACHINE

Operate Safely

- In addition to reading your Operator's Manual, view your Mowing Safety Video.
- Check brake action before you operate. Adjust or service brakes as necessary.
- Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Clear work area of objects that might be thrown. Keep people and pets out of the work area. Stop machine if anyone enters the area.
- If you hit an object, stop the machine and inspect it. Make repairs before you operate. Keep machine and attachments properly maintained and in good working order.
- DO NOT leave machine unattended when it is running.
- Only operate during daylight or with good artificial light.
- Be careful of traffic when operating near or crossing roadways.
- Do not wear radio or music headphones while operating the machine. Safe operation requires your full attention.



Park Safely

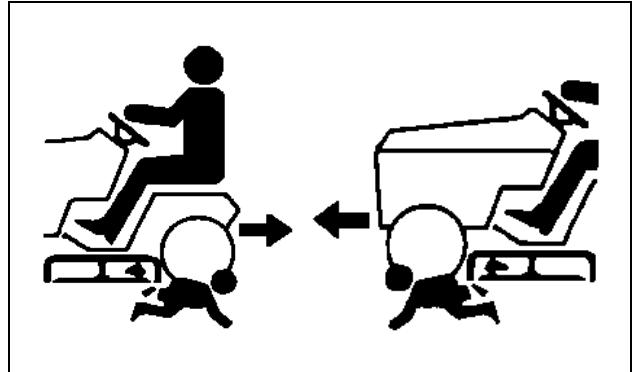
- Stop machine on a level surface, not on a slope.
- Disengage mower blades.
- Lower attachments to the ground.
- Engage park brake.
- STOP engine.
- Remove key.
- Before you leave the operator's seat, wait for engine and all moving parts to STOP.

OPERATING MACHINE

Rotating Blades are Dangerous - Protect Children and Prevent Accidents

PROTECT CHILDREN:

- Never assume that children will remain where you last saw them. Children are attracted to mowing activity, stay alert to the presence of children.
- Keep children in the house when you are operating the machine.
- Turn machine off if a child enters the mowing area.
- Use extra care when you come to blind corners, shrubs, trees, or other objects that may block your vision.
- DO NOT let children or an untrained person operate the machine.
- DO NOT carry or let children ride on machine or any attachment. DO NOT tow children in a cart or trailer.



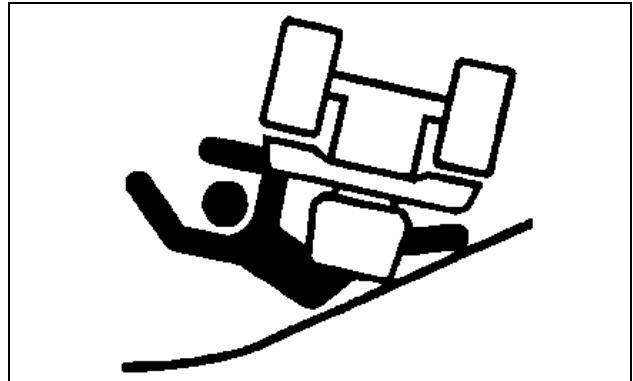
HELP PREVENT SERIOUS OR FATAL ACCIDENTS:

- Be alert at all times, drive forward carefully. People especially children can move quickly into the mowing area before you know it.
- Back carefully. Disengage mower blades and look behind the machine carefully, especially for children, before you back up.
- DO NOT mow in reverse unless it is absolutely necessary.
- Disengage mower blades when you are not mowing.
- DO NOT operate machine if you are under the influence of drugs or alcohol.

OPERATING MACHINE

Avoid Tipping

- DO NOT drive where machine could slip or tip.
- Stay alert for holes and other hidden hazards in the terrain.
- Keep away from drop-offs.
- Slow down before you make a sharp turn or operate on a slope.
- When pulling loads or using heavy equipment, use only approved hitches, limit loads to those you can safely control, and use counterweights or wheel weights when required per this manual or your attachment manual.
- Drive up and down a hill—not across. Be careful when you change direction on a slope.
- DO NOT stop when going up hill or down hill. If machine stops going up hill, DISENGAGE mower blades and back down slowly.
- DO NOT mow wet grass. Reduced traction could cause sliding.
- DO NOT try to stabilize the machine by putting your foot on the ground.



Keep Riders Off

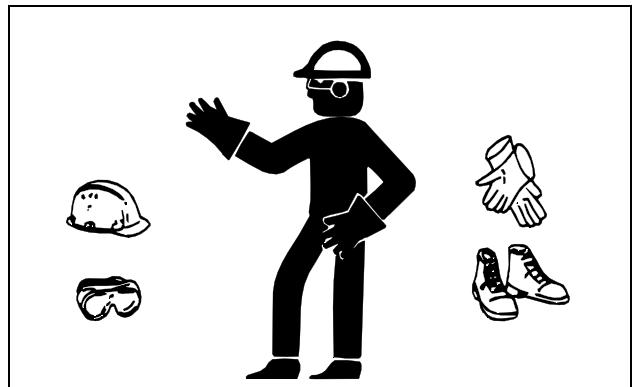
- Only allow the operator on the machine. Keep riders off.
- Riders on the machine or attachment may be struck by foreign objects or thrown off the machine causing serious injury.
- Riders obstruct the operator's view resulting in the machine being operated in an unsafe manner.



OPERATING MACHINE

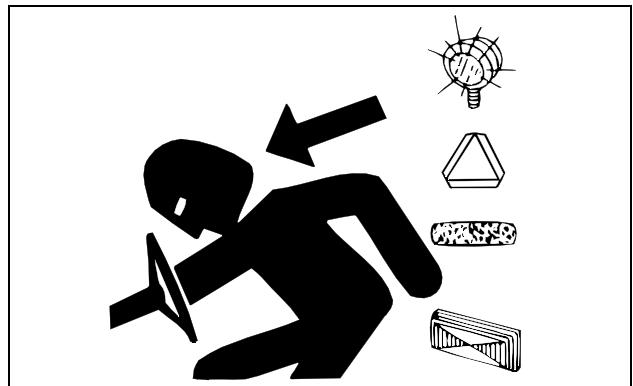
Wear Appropriate Clothing

- Wear close fitting clothing and safety equipment appropriate for the job.
- Loud noise can cause impairment or loss of hearing, wear a suitable protective device such as earplugs.



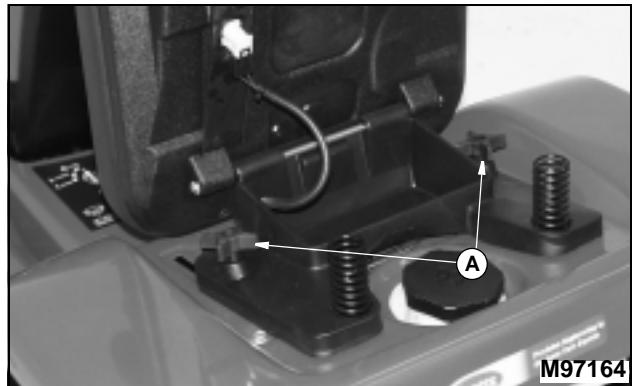
Transport Safely

- Use safety lights and devices. Slow moving machines when driven on public roads are hard to see, especially at night. Avoid personal injury or death resulting from a collision with a vehicle.
- Whenever driving on public roads, use flashing warning lights and turn signals according to local regulations. Extra flashing warning lights may need to be installed.



Adjusting Seat

1. Tip seat forward and loosen two knobs (A) to slide seat assembly forward or rearward to most comfortable OPERATOR position.
2. Tighten knobs after adjustment to keep seat in place.



OPERATING MACHINE

Using the Park Brake



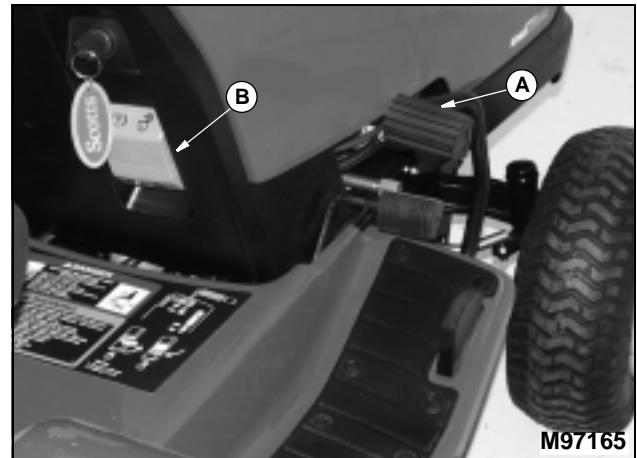
CAUTION: Avoid injury. The machine may begin to move when engine is shut off and park brake is not engaged. To avoid injury, always LOCK park brake before getting off tractor or leaving tractor unattended.

LOCKING PARK BRAKE:

1. Push brake pedal (A) all the way down.
2. Lift park brake lever (B) up.
3. Release pedal and park brake lever. Pedal should stay down and park brake lever should stay LOCKED in UP position.

UNLOCKING PARK BRAKE:

1. Push and hold brake pedal (A) down.
2. Push park brake lever (B) down to UNLOCK park brake.
3. Release pedal.

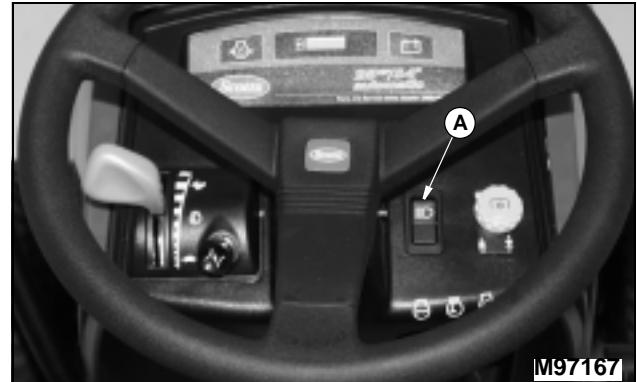


Using Headlights

Picture Note: Model S2554 used for photo purposes.

Push top of light switch (A) to turn headlights ON.

Push bottom of light switch to turn headlights OFF.



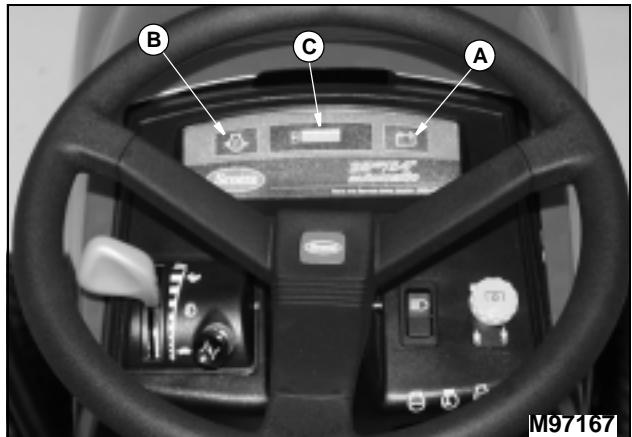
M97167

OPERATING MACHINE

Checking Indicator Lights and Hour Meter

Picture Note: Model S2554 used for photo purposes.

- (■) BATTERY DISCHARGE light (A) should go out when throttle lever is moved to the HIGH IDLE/Mowing (■) position. The voltage light may remain on for several minutes while the battery is being charged.
- (●) OIL PRESSURE light (B), on Model S2554 only, will come on when engine starts and should go out within 5 seconds.
- HOUR METER (C), on Model S2554 only, shows the number of hours the engine has run. To display hours, key must be in the "ON" position. Check the hour meter daily to see what services need to be done.



M97167

Starting Engine



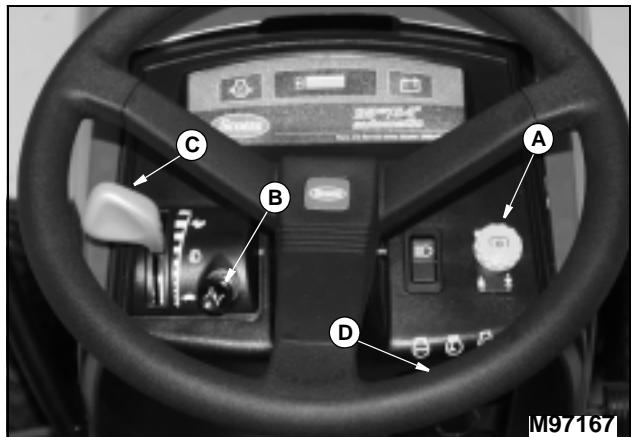
CAUTION: Avoid injury. Engine exhaust fumes can cause sickness or death.

- If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.
- If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

IMPORTANT: Avoid machine damage. Do not operate starter more than 20 seconds at a time, or you may damage it. If engine does not start: Wait two minutes before you try again. See Troubleshooting section.

Picture Note: Model S2554 used for photo purposes.

1. Lock the park brake or depress brake pedal.
2. Push PTO switch (A) down to DISENGAGE.
3. Pull choke knob (B) out to the ON (■) position.
4. Move throttle lever (C) to the HALF-SPEED (◎) position.
5. Turn key (D) to START position.
6. When engine starts, release key to RUN position.



M97167

OPERATING MACHINE

7. Check starting conditions:

- **If engine is COLD:** Gradually return the choke to the OFF position after the engine starts and warms up.
- **If engine is WARM:** Return choke to the OFF position as soon as the engine starts.

8. Let engine run for a couple of minutes to warm-up before operating machine.

Warming and Idling Engine

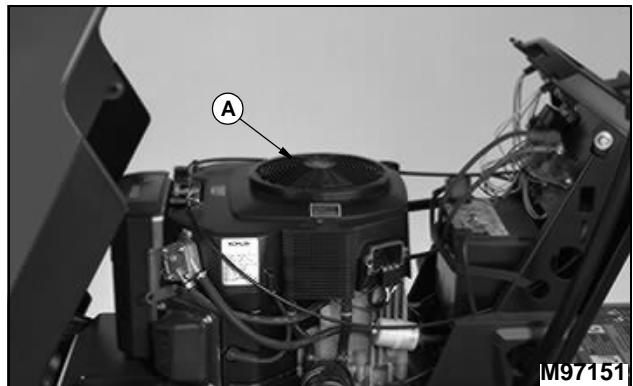
WARMING ENGINE:

1. Run Engine at half speed for 2–3 minutes.

IDLING ENGINE:

Picture Note: Model S2554 shown for photo purposes.

1. Engine is air-cooled and needs a large volume of air to keep cool. Keep air intake screen (A) on top of engine clean.
2. Avoid unnecessary engine idling.



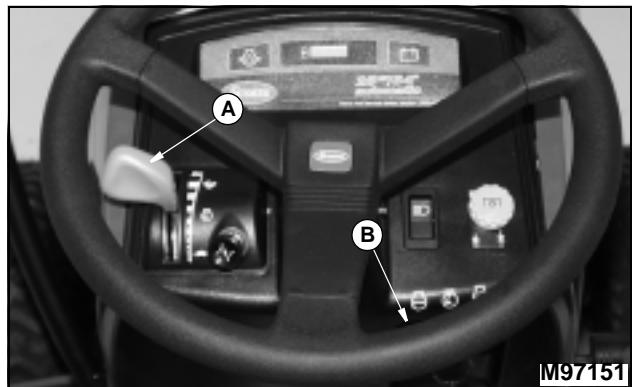
M97151

Stopping Engine

1. STOP tractor travel.

Picture Note: Model S2554 shown for photo purposes.

2. Move throttle lever (A) MIDWAY between slow (怠) and fast (快) positions. Let the engine run a minimum of 15 seconds.
3. Turn key (B) to OFF position.
4. LOCK the park brake.
5. Remove key.



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OPERATING MACHINE

Using and Stopping Automatic Transmission



CAUTION: Avoid injury:

- Before moving forward or rearward, make sure area is clear of bystanders, especially children.
- Disengage mower before backing up.

UNLOCK park brake.

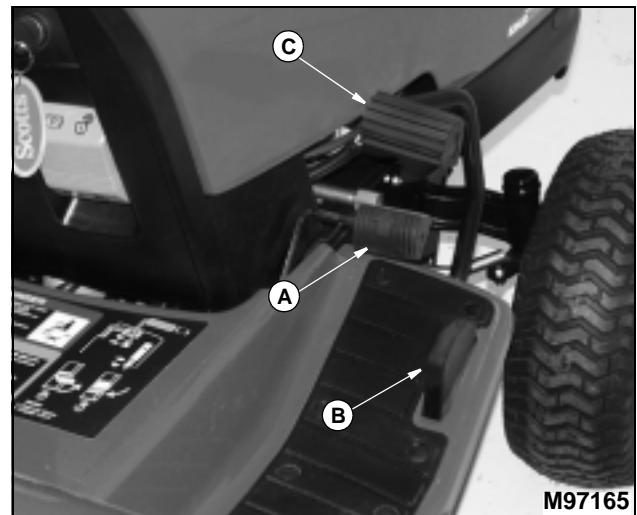
To Travel Forward:

1. Slowly push down forward pedal (A). Tractor will travel faster the farther down you push the pedal.
2. Release forward pedal, tractor will automatically return to neutral and STOP.

To Travel in Reverse:

NOTE: The engine and any operating attachment will stop as the REVERSE pedal is depressed with attachment engaged.

1. Bring the vehicle to a stop.
2. Push PTO knob down to the OFF position to disengage attachment.
3. Look behind the vehicle to be sure there are no bystanders nearby.
4. Push down reverse pedal (B).



For Emergency Stopping:

1. Release either travel pedal. Tractor will automatically return to neutral and STOP.
2. Push down on brake pedal (C). Tractor brakes will be applied to assist in stopping.

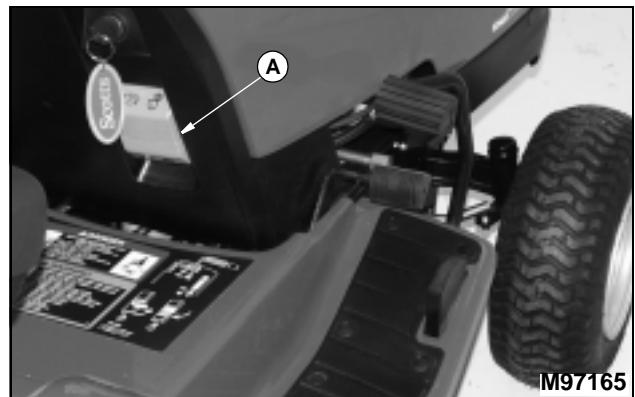
OPERATING MACHINE

Pushing Machine

IMPORTANT: Avoid machine damage, DO NOT tow machine or transmission damage could result.

To move machine when engine is STOPPED:

1. Unlock the park brake (A).



2. Pull out on free-wheeling lever (B).

3. Push machine to desired location.

NOTE: Push free-wheeling lever (B) in before operating tractor.



OPERATING MACHINE

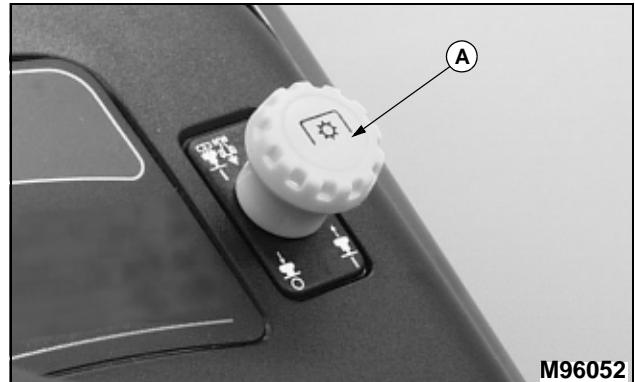
Using Reverse Implement Option



CAUTION: Avoid injury: Before moving forward or rearward, make sure area is clear of bystanders, especially children.

NOTE: *Operating the mower while backing up is strongly discouraged. The Reverse Implement Option should be used ONLY when operating another attachment or when the operator deems it necessary to reposition the machine with the mower engaged.*

1. Stop the machine FORWARD travel with the attachment still engaged.
2. Look behind the vehicle to be sure there are no bystanders.
3. Lift and hold the PTO knob (A) up past the PTO engagement position to activate the reverse implement position while depressing REVERSE foot pedal slightly.
NOTE: *If the engine and attachment stop while repositioning the machine, return PTO knob to the OFF position and restart the machine. (See Starting The Engine in this section.) Begin again with Step 2.*
4. As the machine begins to move backward, release the PTO knob and reposition the machine.
5. Resume FORWARD travel. The attachment should continue operating.
6. Repeat Steps 1 through 5 to reposition the machine again.



M96052

Daily Operating Checklist

- Test safety systems.
- Check tire pressure.
- Check fuel level.
- Check engine oil level.
- Remove grass and debris from machine.

OPERATING MACHINE

Testing Safety Systems



CAUTION: Avoid injury: Engine exhaust fumes can cause sickness or death.

- If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.
- If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

NOTE: Your Tractor is equipped with a **ELECTRONIC SAFETY INTERLOCK**. Engine will not start unless: PTO switch is DISENGAGED; Brake pedal is depressed OR parking brake is set.

Use the following checkout procedure to check for normal operation of tractor.

If there is a malfunction during one of these procedures, DO NOT operate tractor. (Contact your Authorized Service Center for service.)

Perform these tests in a clear open area. Keep bystanders away.

Test 1

Check operation of indicator lights:

1. Turn key to RUN position.

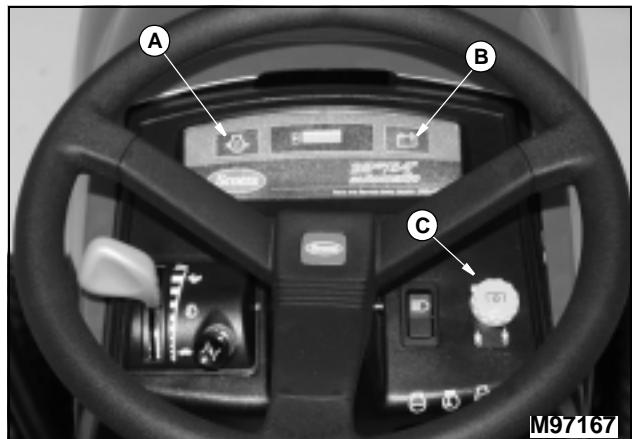
Picture Note: Model S2554 used for photo purposes.

2. LOOK:

- Engine Oil Pressure Light (A), on Model S2554 Only, MUST light.
- Battery Discharge Light (B) will momentarily light, this indicates the system is functioning properly. If the light remains on start engine and move throttle to high idle, the light should go out.

NOTE: The battery discharge light may remain on for several minutes while the battery is being charged.

3. If one indicator does not light, see Replacing Indicator Light Bulb in Service – Electrical section.
4. If new indicator bulb does not light or no indicators work, contact your Authorized Service Center for service.



M97167

OPERATING MACHINE

Test 2

Picture Note: Model S2554 used for photo purposes.

1. Operator on seat.
2. UNLOCK the park brake.
3. Push PTO switch (A) down to DISENGAGE.
4. Try to start engine.
5. Engine MUST NOT start. If engine starts, there is a problem with your safety interlock circuit.



Test 3

Picture Note: Model S2554 used for photo purposes.

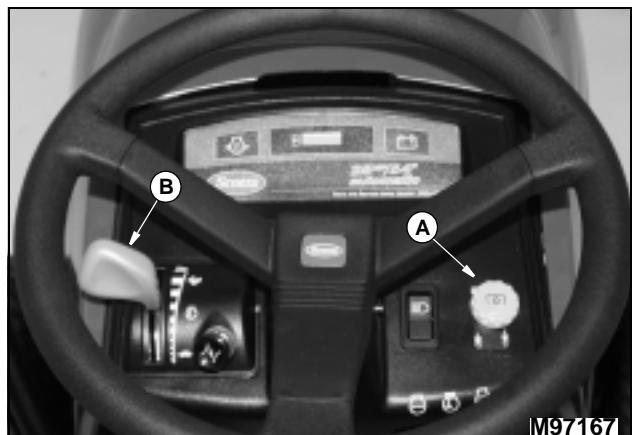
1. Operator on seat.
2. LOCK the park brake.
3. Pull PTO switch (A) up to ENGAGE.
4. Try to start engine.
5. Engine MUST NOT start. If engine starts, there is a problem with your safety interlock circuit.



Test 4

Picture Note: Model S2554 used for photo purposes.

1. Operator on seat.
2. LOCK the park brake.
3. Push PTO switch (A) down to DISENGAGE.
4. Start engine and move throttle lever (B) to HALF-SPEED ($\frac{1}{2}$) position.
5. Pull PTO switch (A) up to ENGAGE.
6. Move throttle lever (B) to FAST ($\frac{3}{4}$) speed position.
7. Raise up off of seat. DO NOT get off tractor.
8. Engine MUST stop. If engine does not stop, there is a problem with your safety interlock circuit.



OPERATING MACHINE

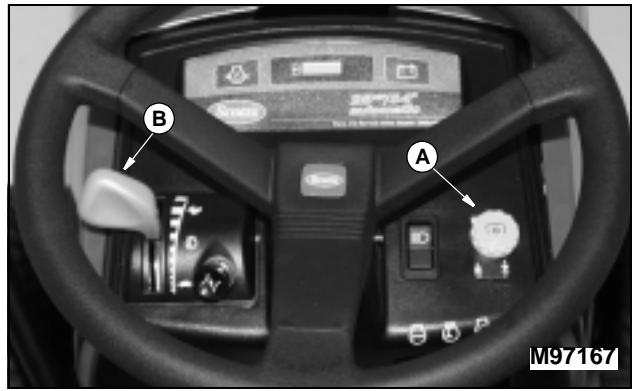
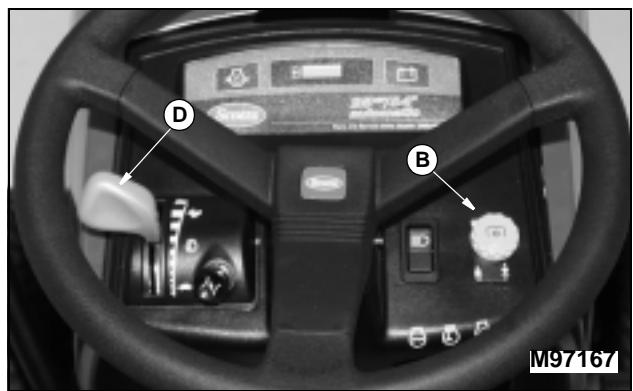
Test 5

1. Operator on seat.
2. Push brake pedal (A) down.
- Picture Note: Model S2554 used for photo purposes.
3. Push PTO switch (B) down to DISENGAGE.
4. Release forward travel pedal (C) to N (NEUTRAL) position.
5. Start engine and move throttle lever (D) to FAST (骋) speed position.
6. Release brake slowly.
7. Raise up off of seat. DO NOT get off tractor.
8. Engine MUST stop. If engine does not stop, there is a problem with your safety interlock circuit.



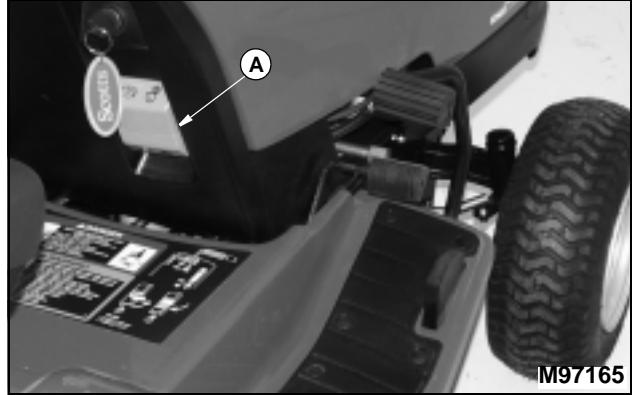
Test 6

1. Operator on seat.
2. Lock the park brake.
- Picture Note: Model S2554 used for photo purposes.
3. Push PTO switch (A) down to DISENGAGE.
4. Start engine and move throttle lever (B) to FAST (骋) speed position.
5. Raise up off of seat. DO NOT get off tractor.
6. Engine MUST remain running. If engine does stop, there is a problem with your safety interlock circuit.



Test 7

1. LOCK the park brake (A).
2. Pull out free-wheeling lever.
3. Try to push machine manually.
4. Park brake MUST prevent machine from moving. If machine moves, parking brake needs to be adjusted.



OPERATING MACHINE

Test 8



CAUTION: Avoid injury: Before moving rearward, make sure area is clear of bystanders, especially children.

Test Reverse Implement Option:

1. Start engine.
2. Engage PTO to start attachment.
3. Look behind the vehicle to be sure there are no bystanders.
4. Begin REVERSE travel by depressing REVERSE foot pedal.
5. Attachment and engine should stop operation. If attachment or engine continues to operate while tractor travels in REVERSE, do not continue to operate attachment. See your Authorized service center for service.

Avoid Damage to Plastic and Painted Surfaces

- DO NOT wipe plastic parts unless rinsed first. (See Correct Cleaning Care in Service-Miscellaneous section.)
- Insect repellent spray may damage plastic and painted surfaces. Do not spray insect repellent near machine.
- Be careful not to spill fuel on machine. Fuel may damage surface. Wipe up spilled fuel immediately.

OPERATING MACHINE

Using Ground Engaging Equipment (Model S2048 Only)

IMPORTANT: Avoid machine damage. Your S2048 tractor is NOT intended for use with ground engaging equipment except for a rear tiller. Use of any other ground engaging equipment such as a disk, dirt blade or plow could result in damage to transmission components.

Tractor Model S2048 is not intended for use with ground engaging equipment such as a disk, dirt blade or plow.

Using Front Weights



CAUTION: Avoid injury resulting from tractor instability.

Tractor front wheel weights improve stability in most slope operation.

Add front wheel weights for better front-end stability and steering when using a rear mounted attachment or pulling a cart.

NOTE: Before installing wheel weights on your machine, MAKE SURE that the tire valve stems are facing the inside.

Install front wheel weights for better stability and steering control when you use equipment such as the rear-mounted grass bagger or dumpcart.

Remove front wheel weights when not required.

Using Rear Wheel Weights

IMPORTANT: Avoid machine damage:

When adding weight to rear of tractor, use wheel weights only.

34 kg (75 lbs.) MAX. each wheel.

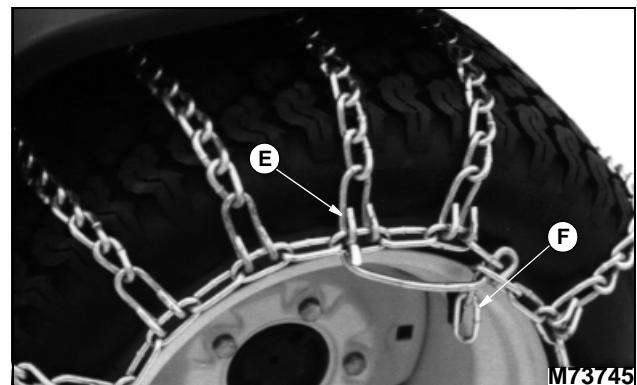
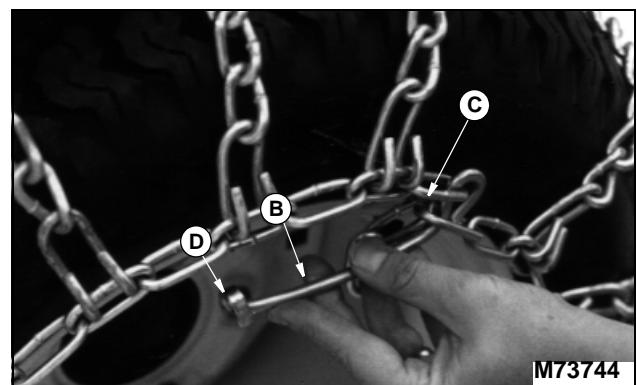
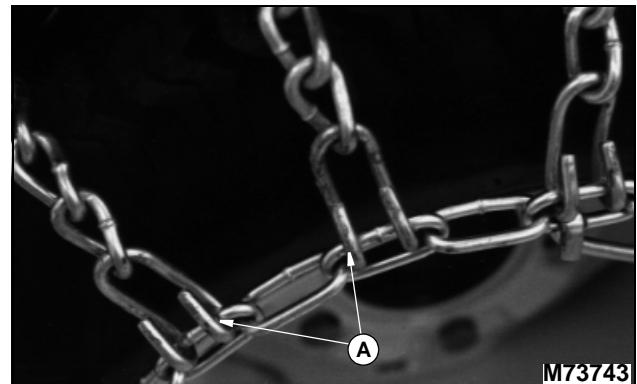
Use of rear wheel weights is recommended when an attachment, such as snowblower or snow blade is used.

OPERATING MACHINE

Installing the Chains

NOTE: Tire chains are recommended for use with snowblower and, under certain conditions, the front blade.

1. Park vehicle safely.
2. Remove chains from bag and lay out flat with the cross chain hook ends facing upward. Remove any twists and tangles from cross chain and rim chain.
3. Drive machine onto chains.
4. Drape chain over tire with the lever fastener on outside of tire and cross link hooks (A) facing upward and away from tire.
5. Adjust chain for straightness and an even amount of cross chain links on each side of tire.
6. Place the first cross chain (opposite the end with fastener and inside hook) under tire.
7. Pull the inside rim chain tight and hook the inside hook. Pull the outside rim chain tight and hook the outside lever fastener (B) by running the end through a free link (C). Close the fastener by rotating it back 180 degrees and engaging the hook (D) on the end of the fastener into a rim chain link (E). Make sure the chain is centered on the tire with approximately the same number of free rim links (F) on the inside and outside.



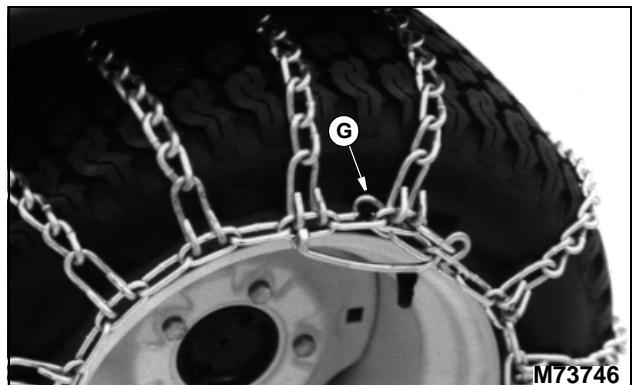
OPERATING MACHINE

8. Tie excess rim chain links (G) back to the rim chain.
9. The chain should be as tight as possible by hand. Unhook the fastener and repeat Step 5 if the chain is loose.
10. Drive forward on chains 30'-40' and recheck for tightness. Adjust as necessary.

IMPORTANT: Avoid machine damage:

Periodically check chains for looseness and adjust when necessary.

Maintain proper air pressure in tires.



Transporting

1. Do not tow machine.
2. Use a heavy-duty trailer to transport your machine.
3. Drive forward onto trailer.
4. Lower mower or any attachment to trailer deck.
5. LOCK park brake.
6. Be sure trailer has all the necessary lights and signs required by law.
7. Fasten machine to trailer with heavy-duty straps, chains, or cables. Both front and rear straps must be directed down and outward from tractor.

OPERATING MOWER

Operating Mower Safely

- In addition to reading your Operator's Manual, view your Mowing Safety Video.

Check Ground Conditions

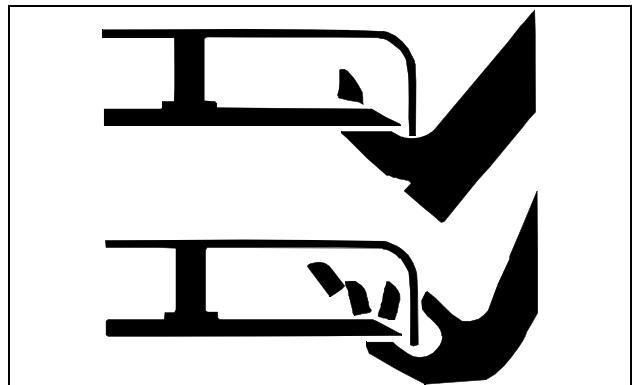
- Clear mowing area of objects that might be thrown. Keep people and pets out of mowing area.
- Study mowing area. Set up safe mowing pattern. Do not mow under conditions where traction or stability is doubtful.
- First, test drive area with PTO switch DISENGAGED and mower lowered. Slow down when you travel over rough ground.



Avoid Injury From Contacting Blades

Before you dismount to unplug or adjust mower:

- DISENGAGE PTO switch to stop mower blades.
- STOP the engine.
- LOCK the park brake.
- Remove key.
- Wait for mower blades to STOP.
- Keep hands, feet and clothing away from mower deck when engine is running.
- DISENGAGE PTO switch to stop mower blades when you are not using mower.



OPERATING MOWER

Using Lift Lever to Raise and Lower Mower

Check out the two different lift lever positions before operation:

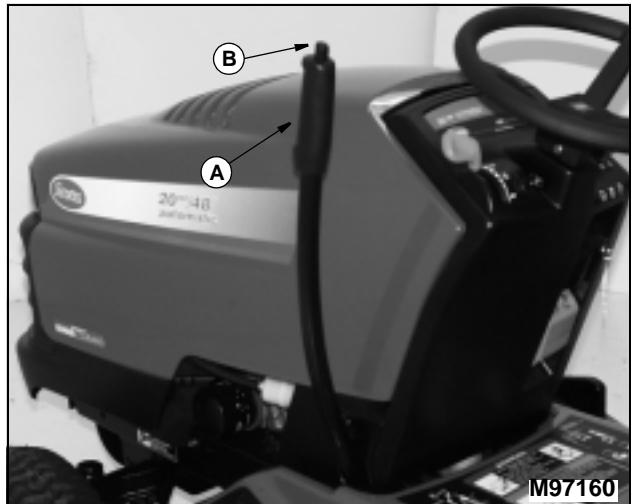
- **TRANSPORT (UPPER) POSITION:** Raises mower for transport.
- **MOWING (LOWER) POSITION:** Maintains cutting height set by mower height control yet allows deck to float over uneven terrain.

To put mower in MOWING (lower) position:

- Pull lift lever (A) back slightly.
- Push in button (B).
- Push lever forward until it latches down.

To put mower in TRANSPORT (upper) position:

- Push forward on lift lever (A) slightly.
- Push in button (B).
- Pull lever back until it latches.



Adjusting Cutting Height

IMPORTANT: Avoid machine damage. Lift lever must be in TRANSPORT (upper) position before turning cutting height knob.

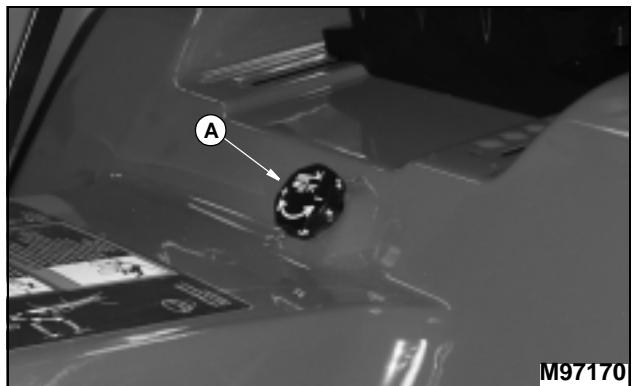
NOTE: Adjust gage wheels after you change cutting height. (See Adjusting Mower Gage Wheels in this section.)

Cutting height can be adjusted from approximately 25–100 mm (1–4 in.).

When lift lever is in TRANSPORT (upper) position (lift lever all the way back), cutting height is approximately 100 mm (4 in.).

Knob (A) has cutting height identification numbers embossed in it. To change or attain cutting height desired:

- Pull lift lever all the way back to TRANSPORT (upper) position.
- Turn cutting height knob (A) to desired cutting height position. Mower will be at this cutting height each time you lower it.



OPERATING MOWER

Adjusting Mower Gage Wheels

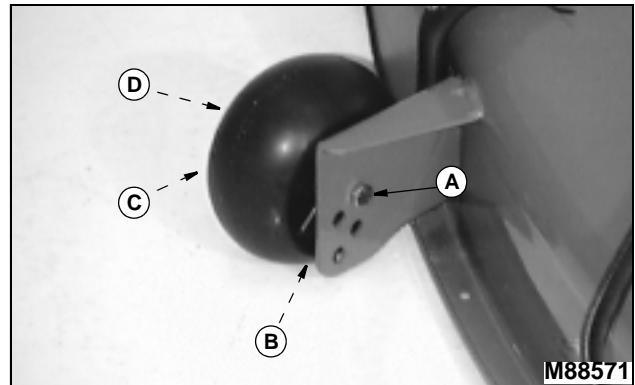


CAUTION: Avoid injury. Before you adjust gage wheels:

- STOP engine
- Remove key.
- Wait for blades to STOP

IMPORTANT: Avoid machine damage. Mower gage wheels must not ride on ground to support mower weight. Adjust gage wheels each time you change cutting height.

1. Check tractor tire pressure. Inflate tires to the correct pressure. (See Checking Tire Pressure in Service - Miscellaneous section.)
2. Raise mower lift lever to TRANSPORT (upper) position and adjust cutting height. (See Adjusting Cutting Height in this section.)
3. Remove bolt (A), bushing (B), washer (C), and tighten with nut (D).
4. Move mower gage wheels, one on each side, to one of four holes for desired position.
5. Install bolt and tighten with nut.
6. Move lift lever forward to MOWING (lower) position.
7. Check distance from gage wheel to ground.
8. Adjust gage wheels if necessary.



OPERATING MOWER

Adjusting Mower Level (Side-to-Side)



CAUTION: Avoid injury. Before you adjust mower:

- STOP engine,
- Remove key.
- Wait for blades to STOP.

Be careful of sharp edges on mower blades.

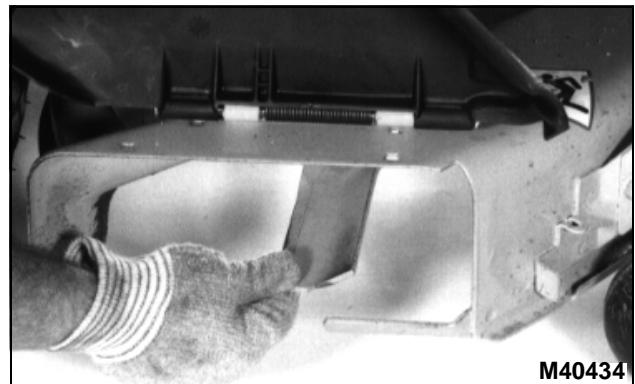
Always wear gloves when handling mower blades.

NOTE: A deck leveling gauge (Part Number TY15272) to aid in deck leveling may be obtained through your Authorized Service Center at a nominal cost.

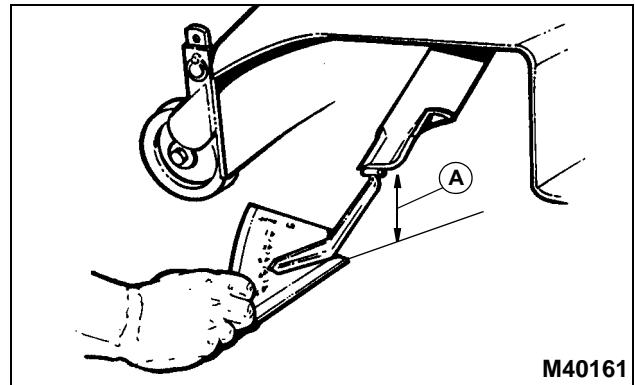
1. Park tractor on a hard, level surface.
2. Stop engine and remove key.
3. CHECK: Tire pressures must be correct. (See Checking Tire Pressure in Service – Miscellaneous section.)
4. Adjust cutting height to 50 mm (2 in). (See Adjusting Cutting Height in this section.)

NOTE: Mower gage wheels should not contact the ground.

5. Put mower lift lever in MOWING (lower) position.
6. Turn left blade by hand parallel to tractor axle. Hold drive belt and turn right blade parallel to axle.



7. Measure from each outside blade tip (A) to the level surface. The difference between measurements must not be more than 3 mm (1/8 in).

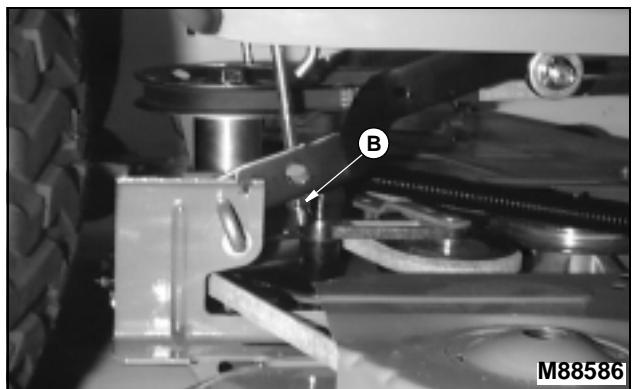


OPERATING MOWER

NOTE: Adjustable lift links are on both sides of mower. Cutting height can closely match knob setting by using adjustment on both sides. DO NOT adjust deck too high or it will not lock in transport (upper) position.

8. Turn nut (B), (right side shown): Clockwise to RAISE right side of mower and counterclockwise to LOWER right side of mower.

9. Check side-to-side measurements and readjust if necessary.



Adjusting Mower Level (Front-to-Rear)



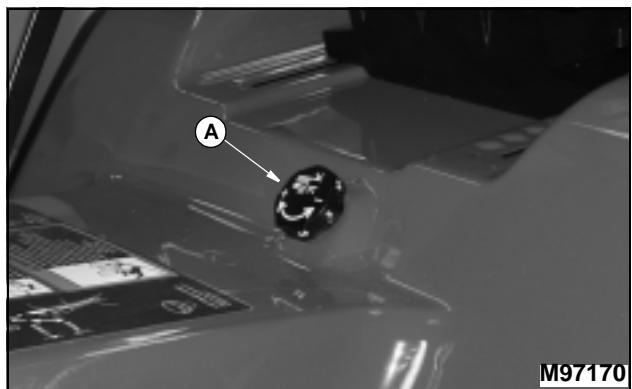
CAUTION: Avoid injury. Before you adjust mower:

- STOP engine
- Remove key.
- Wait for blades to STOP.

Be careful, sharp edges on mower blades.
Always wear gloves when handling mower blades.

NOTE: Mower gage wheels should not contact the ground during leveling.

1. Park tractor on a hard, level surface.
2. Stop engine and remove key.
3. CHECK: Tire pressure must be correct. (See Checking Tire Pressure in Service – Miscellaneous section.)
4. Pull lift lever all the way back to TRANSPORT (upper) position.
5. Turn mower depth control knob (A) to adjust cutting height to 50 mm (2 in).
6. Move lift lever forward to MOWING (lower) position.
7. Turn left blade so blade tip points straight forward.
8. Hold drive belt and turn right blade straight forward.
9. Measure from the front of each blade tip to the level surface. The front blade tips must be 6–9 mm (1/4–3/8 in.) lower than rear blade tips or blades will cut grass twice and tips will turn brown.

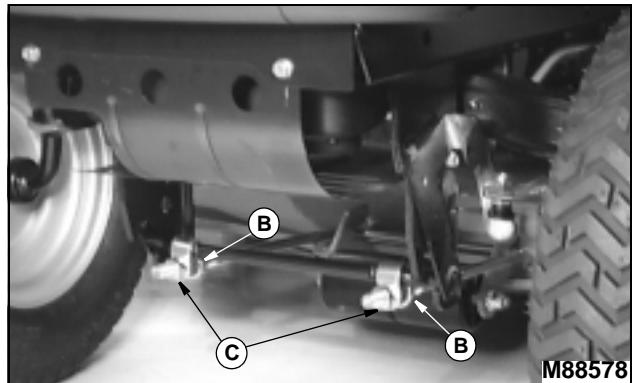


OPERATING MOWER

10. Loosen two rear nuts (B) on front lift rod assembly and turn two front nuts (C) clockwise to RAISE front of mower deck or counterclockwise to LOWER front of mower deck.

11. Tighten rear nuts (B) after adjustment is completed.

12. Check front-to-rear deck measurements and readjust if necessary.



M88578

Engaging Mower

IMPORTANT: Avoid machine damage. Operate mower at HIGH IDLE/Mowing (刈) when mowing or after mower blades are engaged.

Machine may require 2-3 minutes warm-up period before engaging the mower deck.

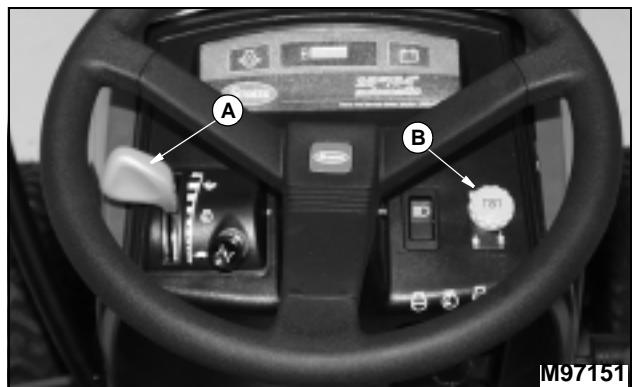
1. START engine.

Picture Note: Model S2554 shown for photo purposes.

2. Move throttle lever (A) to the FAST (FAST) position.
3. Lower mower to cutting height.
4. Pull PTO switch (B) up to ENGAGE mower.

NOTE: Any operating attachment and the engine will stop as the REVERSE foot pedal is depressed with attachment engaged.

5. Disengage PTO before shifting to REVERSE.



M97151

Disengaging Mower

Picture Note: Model S2554 shown for photo purposes.

Push PTO switch (A) down to DISENGAGE mower.

If you hit an object with mower while mowing, STOP mower and engine immediately. Inspect mower for damage.



M97151

OPERATING MOWER

Dismounting to Inspect or Unplug Mower or Optional Bagger



CAUTION: Avoid injury, complete the following steps before you dismount to inspect or unplug mower or bagger.

1. STOP machine.
2. Push PTO switch down to DISENGAGE mower.
3. Move throttle lever to SLOW (▲) position.
4. Lower mower to the ground.
5. LOCK park brake.
6. STOP engine.
7. Remove key.
8. Wait for all moving parts to STOP.

REPLACEMENT PARTS

WE RECOMMEND quality parts and lubricants, available at your Authorized Service Center.

PART NUMBERS MAY CHANGE, use part numbers listed below when you order. If a number changes, your dealer will have the latest number.

WHEN YOU ORDER PARTS, your Authorized Service Center needs your machine serial number and engine serial number. These are the numbers that you have recorded on the inside front cover of this manual.

ALL PART NUMBERS shown are available through your Authorized Service Center.

Parts for Tractor and Mower Deck

ITEM	PART NUMBER
Air Cleaner Elements (Model S2048): Foam Precleaner Paper Element	M133094 (Kohler #24 083 01) M133095 (Kohler #47 083 03)
Air Cleaner Elements (Model S2554): Foam Precleaner Paper Element	M133094 (Kohler #24 083 01) M133095 (Kohler #47 083 03)
Fuel Filter	M132403
Oil Filter	AM125424 (Kohler #12 050 01)
Battery	TY21752
Spark Plug	Champion – RC12YC (Kohler #12 132 02)
Fuse-15 amp	99M7065
Headlight Bulb	AD2062R (GE #1156)
Belts (48-Inch Mower): Primary (PTO clutch to upper deck sheave) Secondary (Lower deck sheave to blade spindles)	M131237 M110313
Belts (54-Inch Mower): Primary (PTO clutch to upper deck sheave) Secondary (Lower deck sheave to blade spindles)	M131237 M118685
Blade (48-Inch Mower)	M115495
Blade (54-Inch Mower)	M115496
Leveling Gauge	TY15272

(Part numbers are subject to change without notice. Part Numbers may be different outside the U.S.A.)

If you would like a copy of the Parts Catalog for this machine, please use the Order Form in the SERVICE LITERATURE section.

SERVICE MACHINE SAFELY

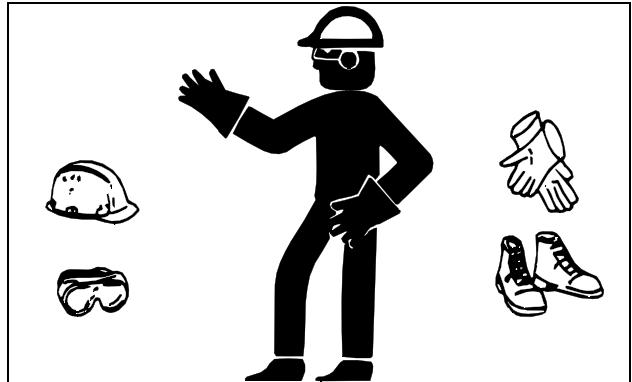
Practice Safe Maintenance

- Understand service procedure before doing work.
- Keep area clean and dry.
- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.
- To prevent them from getting caught, keep hands, feet, clothing, jewelry, and long hair away from any moving parts.
- Before servicing machine, disengage all power and stop the engine. Let engine cool.
- Securely support any machine elements that must be raised for service work.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.
- Unauthorized modifications to the machine may impair its function and safety.



Wear Appropriate Clothing

- Wear close fitting clothing and safety equipment appropriate for the job.
- Loud noise can cause impairment or loss of hearing, wear a suitable protective device such as earplugs.
- Do not wear radio or music headphones while servicing the machine. Safe service requires your full attention.

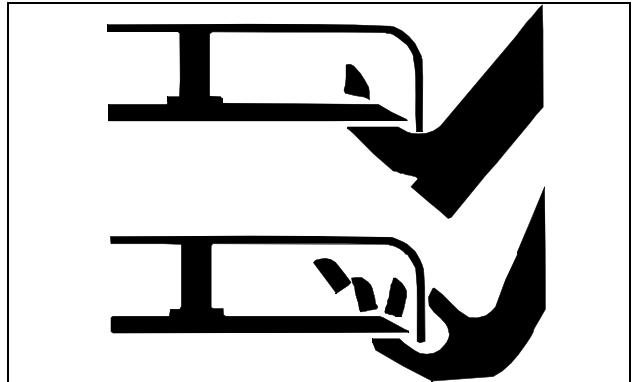


SERVICE MACHINE SAFELY

Avoid Injury From Contacting Blades

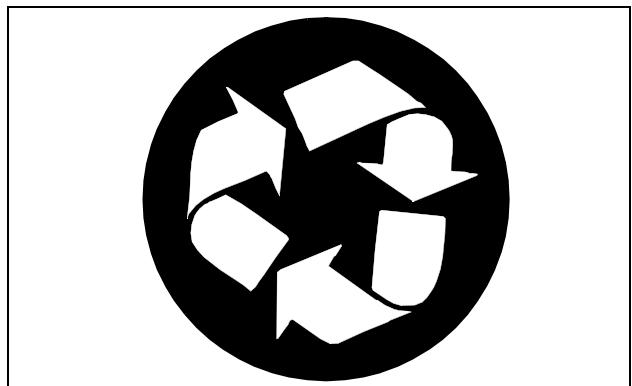
Before you unplug or adjust machine:

- STOP the engine.
- Remove key.
- Wait for blades to STOP.
- Keep hands, feet and clothing away from blades when engine is running.



Handling Waste Product and Chemicals

- Waste products such as used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people.
- DO NOT use beverage containers for waste fluids - someone may drink from them.
- See your local Recycling Center or Authorized Service Center to learn how to recycle or get rid of waste products.
- A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. See your Authorized Service Center for the MSDS on chemical products used with your machine.



SERVICE INTERVAL CHART

Service Intervals

Please use the following timetables to perform routine maintenance on your machine. Service procedures included in this manual but not on this chart are to be performed on an as needed basis.

IMPORTANT: Avoid machine damage. To extend engine life, when operating mower in extreme heat, dust or other severe conditions, service air cleaner and oil filter more often than shown.

Before Each Use	Check fuel level. Check engine oil level. Check air intake and cooling areas, clean as necessary. Test safety systems. Check tire pressure. Check/tighten loose hardware.
After First 2 Hours	Adjust blade belt tension. Change engine oil.
Every 8 Hours	Check brakes. Check tire pressure. Check engine oil level.
Every 25 Hours	Sharpen/replace blades. Lubricate front axle and mower spindles. Check battery and clean battery terminals. Service air filter pre-cleaner. Clean air intake screen. Check transmission oil level.
Every 50 Hours	Inspect muffler.
Every 100 Hours	Change engine oil. Check/tighten loose hardware. Check drive belt tension. Clean engine cooling fins Replace engine oil filter. Replace spark plugs. Replace air filter paper cartridge.

SERVICE INTERVAL CHART

Every Season	Check blade belt tension. Service air filter pre-cleaner. Clean air screen. Replace spark plugs. Replace fuel filter.
Before Storage	Check/tighten loose hardware. Lubricate front axle and mower spindles. Clean battery terminals. Change engine oil. Inspect muffler. Check transaxle cooling.

SERVICE INTERVAL CHART

Service Record

SERVICE ENGINE

Engine Warranty Maintenance Statement

Maintenance, repair, or replacement of the emission control devices and systems on this engine, which are being done at the customers expense, may be performed by any nonroad engine repair establishment or individual. Warranty repairs must be performed by an authorized Authorized Service Center.

Adjusting Carburetor

NOTE: Carburetor is calibrated by the engine manufacturer and should not require any adjustments.

If engine is operated at altitudes above 1829 m (6,000 ft), some carburetors may require a special high altitude main jet. See your Authorized Service Center.

Possible engine surging will occur at high rpm with no load (with transmission in "N" neutral and mower blade engagement lever disengaged). This is a normal condition due to the emission control system.

If engine is hard to start or runs rough, check the Troubleshooting section of this manual.

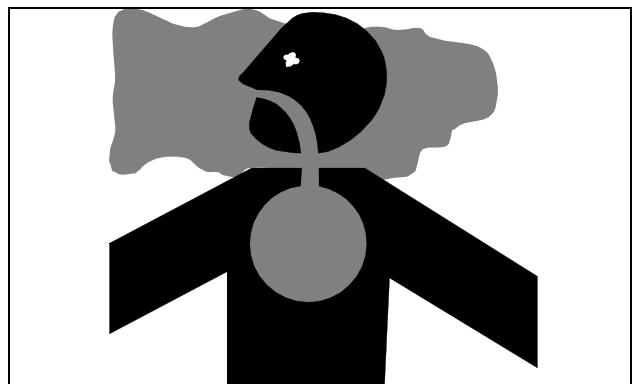
After performing the checks in the troubleshooting section and your engine is still not performing correctly, contact an authorized Authorized Service Center.

Avoid Fumes



CAUTION: Avoid injury. Engine exhaust fumes can cause sickness or death:

- If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove the fumes.
- Always work in a well ventilated area.



SERVICE ENGINE

Engine Oil

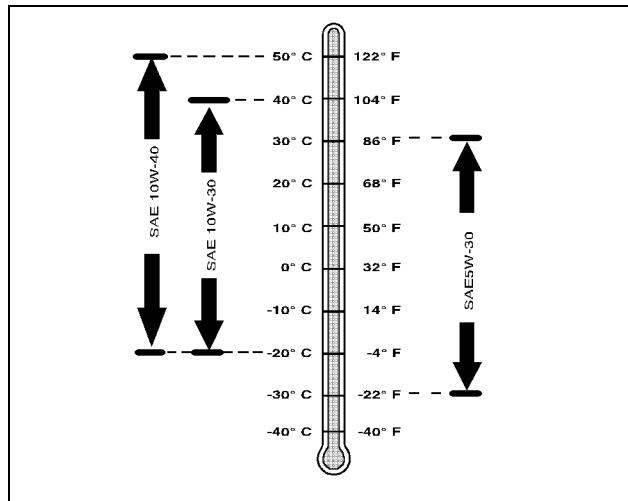
Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following John Deere oils are preferred:

- TORQ-GARD®
- PLUS-4®

Other oils may be used if above John Deere oils are not available, provided they meet the following specification:

- API Service Classification SG or higher



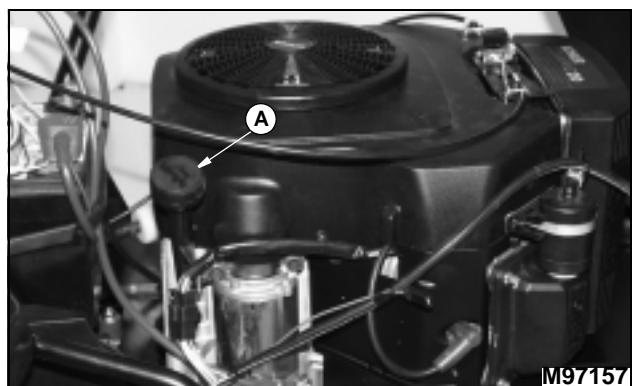
Checking Engine Oil Level

IMPORTANT: Avoid machine damage, DO NOT run engine if oil level is below ADD mark.

1. Park tractor on a level surface. STOP engine. Let engine cool.
2. Lift hood.
3. Clean area around dipstick to prevent debris from falling into crankcase.

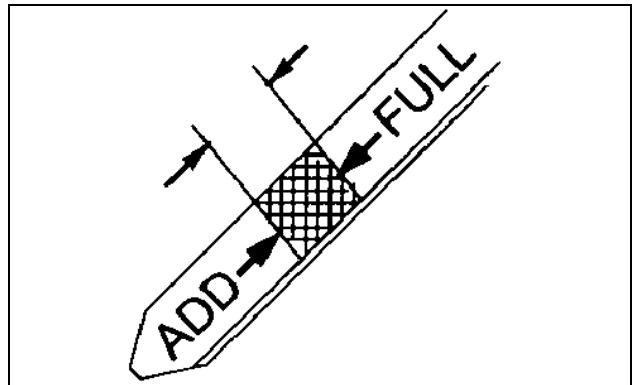
Picture Note: Model S2048 used for photo purposes.

4. Remove dipstick (A). Wipe with clean cloth.
5. Insert dipstick into the tube and rest the oil fill cap on the tube. DO NOT thread the cap onto the tube.
6. Remove dipstick and check the oil level.



SERVICE ENGINE

7. Oil must be between ADD and FULL marks.
8. Add oil to FULL mark if necessary. DO NOT overfill.
9. Install and tighten dipstick. Lower hood.

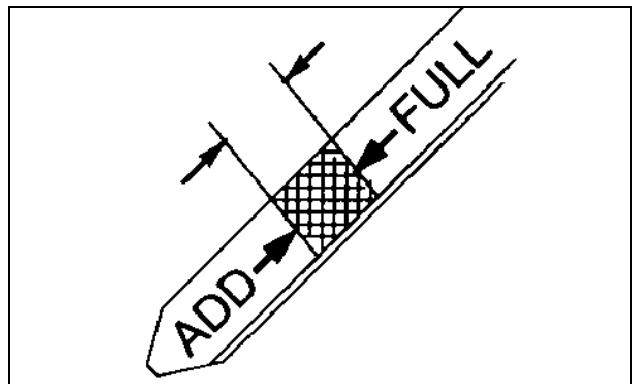
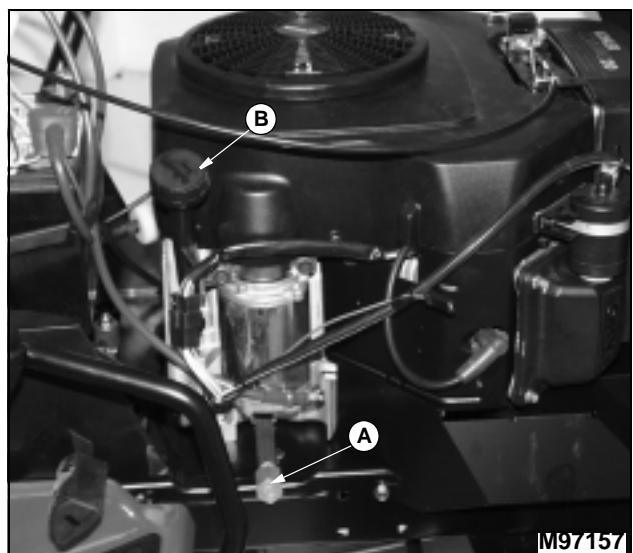


Changing Engine Oil



CAUTION: Avoid injury. Hot Engine and Hot Oil can cause severe burns. Allow engine temperature to drop from hot to warm level before attempting to change oil.

1. Run engine to warm oil.
 2. Park tractor on level surface. STOP engine, LOCK park brake and remove key.
 3. Wipe debris and dirt from around dipstick.
- Picture Note: Model S2048 used for photo purposes.**
4. Put drain pan under drain extension (A).
 5. Remove drain plug (A) and drain oil into oil drain pan.
 6. Replace drain plug. Tighten to: 13.6 N•m (10 ft. lb.).
 7. Remove dipstick (B) and refill with new oil of recommended grade.
- Approximate engine oil capacity: 2.1 L (2 qt)



SERVICE ENGINE

8. Install dipstick and then remove to check oil level.
(See Checking Engine Oil in this section.) Oil level must be between ADD and FULL marks. Do not overfill.
9. Install and tighten dipstick.
10. Start engine and check for oil leaks. Correct any leaks before operating.

Changing Engine Oil Filter



CAUTION: Avoid injury. Hot Engine and Hot Oil can cause severe burns. Allow engine temperature to drop from hot to warm level before attempting to change oil and filter.

To prevent accidental starting, remove wire from spark plugs and disconnect battery at negative terminal before servicing engine.

1. Park tractor on level surface. STOP engine, LOCK park brake and remove key.
2. Drain engine oil and replace with fresh oil. (See Changing Engine Oil in this section.)
3. Wipe debris and dirt from around oil filter.
- Picture Note: Model S2048 used for photo purposes.
4. Put a small shallow pan or funnel under oil filter (A) to catch oil drained from filter.
5. Remove old filter (A) and wipe off filter tray with a clean cloth.
6. Lightly oil filter gasket with fresh, clean oil.
7. Install replacement oil filter. Turn oil filter to the right (clockwise) until rubber gasket contacts filter adapter. Tighten filter an additional one-half turn.
8. Start and run engine at idle to check for leaks. Stop engine.
9. Check oil level. (See Checking Engine Oil Level in this section.)
10. Add oil if required. (See Engine Oil in this section.)



SERVICE ENGINE

Cleaning Air Intake Screen and Engine Fins

IMPORTANT: Avoid machine damage which can result from overheating:

Keep air intake screen free of dust.

Keep cooling fins free of dust.

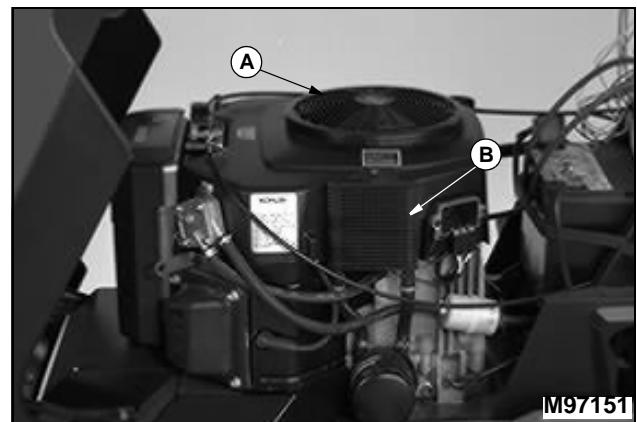
Keep cooling shrouds in place.

1. STOP engine. LOCK park brake and remove key.

2. Lift hood.

Picture Note: Model S2554 shown for photo purposes.

3. Clean air intake screen (A), oil cooler fins (B) on Model S2554, and external surfaces, with rag, brush, vacuum or compressed air. Lower hood.



SERVICE ENGINE

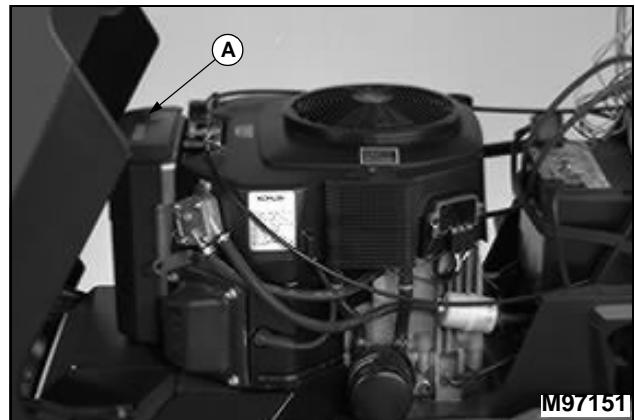
Checking and Cleaning Air Cleaner Elements

NOTE: It may be necessary to check the air filter more frequently if operating vehicle in dusty conditions.

1. Lift hood.
2. Clean any dirt and debris from the air cleaner area before removing cover.

Picture Note: Model S2554 shown for photo purposes.

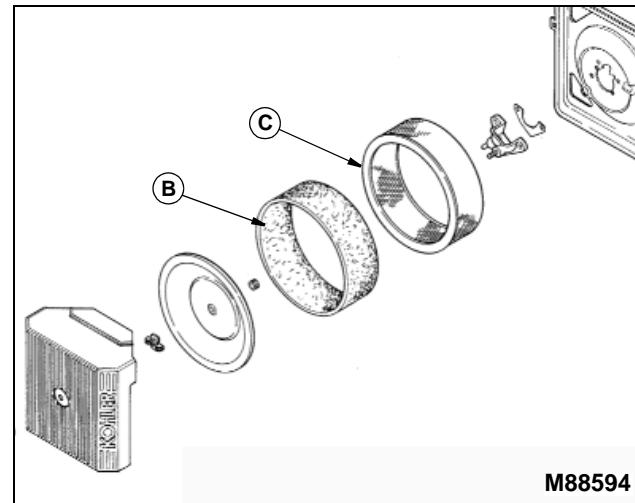
3. Remove cover (A).
4. Inspect foam precleaner (B) and element (C) without removing.



5. If precleaner (B) is dirty, carefully remove from filter, leaving element (C) in the air cleaner housing.

NOTE: DO NOT wash paper element.

6. Wash precleaner (B) in a solution of warm water and liquid detergent.
7. Rinse precleaner thoroughly. Squeeze out excess water in a dry cloth until precleaner is completely dry.
8. Put approximately 30 ml. (1 oz.) of clean engine oil onto precleaner. Squeeze precleaner to distribute oil evenly. Squeeze out excess oil with a clean cloth.



SERVICE ENGINE

IMPORTANT: Avoid machine damage. A damaged paper element (C) can allow dirt into the carburetor and can cause poor engine performance, engine damage or failure:

- DO NOT attempt to clean paper element by tapping against another object.
- Replace element ONLY if very dirty.
- DO NOT use pressurized air to clean element.
- If element is damaged or the seal is cracked, replace.

9. Remove and replace filter element (C) ONLY if damaged or very dirty.

10. Carefully remove element (C) from air cleaner housing. Replace with a NEW element.

11. Carefully clean air cleaner housing. Prevent any dirt from falling into carburetor.

12. Install precleaner onto new filter element and install into air cleaner housing.

13. Install cover. Lower hood.

SERVICE ENGINE

Checking Spark Plugs



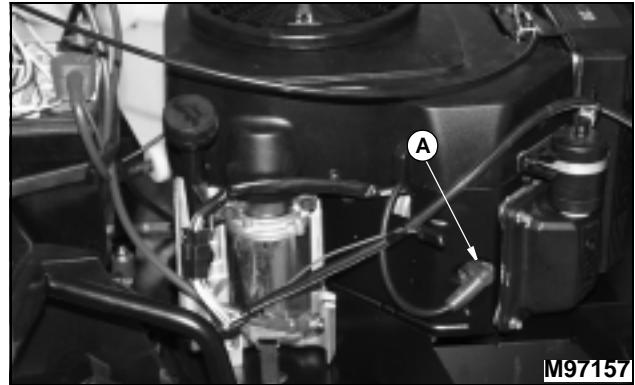
CAUTION: Avoid injury: Before you remove spark plugs, STOP engine and wait until engine is cool.

1. Stop engine. Remove key. Lift hood.

Picture Note: Model S2048 used for photo purposes.

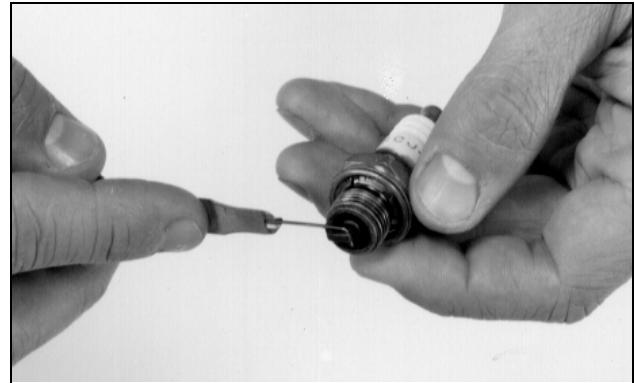
2. Disconnect spark plug wires (A), one on each side, and remove spark plugs.

3. Clean spark plugs carefully with a wire brush.



4. Check plug gap with a wire feeler gauge.

- Gap should be 0.76 mm (0.030 in.)
5. To change gap, move the outer electrode.
 6. Install and tighten spark plug(s).
 - Tighten plug(s) to: 24.4/29.8 N•m (18/22 lb-ft).
 7. Connect the spark plug wires.
 8. Lower hood.



SERVICE ENGINE

Replacing Fuel Filter



CAUTION: Avoid injury. Keep cigarettes, sparks, and flames away from the fuel system. Make sure engine is cool to the touch.

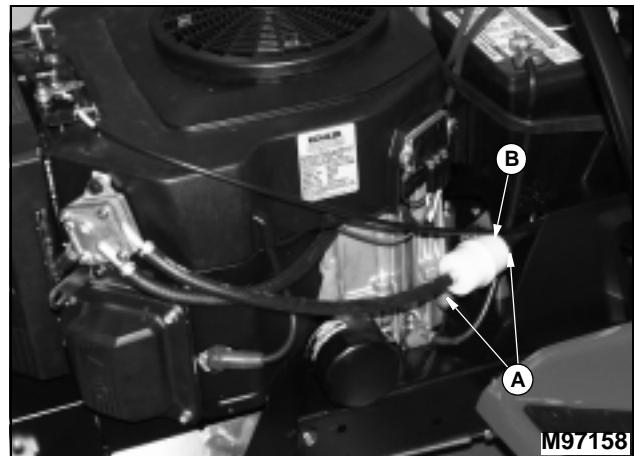
IMPORTANT: Avoid machine damage. When disconnecting fuel tank hose from filter, be sure to hold hose above fuel tank level so fuel does not run out.

NOTE: Change filter when fuel is low in fuel tank.

1. Park tractor on a level surface.
2. STOP engine. Remove key. Let engine COOL.
3. Lift hood.

Picture Note: Model S2048 used for photo purposes.

4. Using pliers, slide hose clamps (A) away from fuel filter (B).
5. Disconnect hoses from filter.
6. Connect hoses to new filter.
7. Install clamps and check for leaks.
8. Lower hood.



M97158

SERVICE TRANSMISSION

Transmission Oil

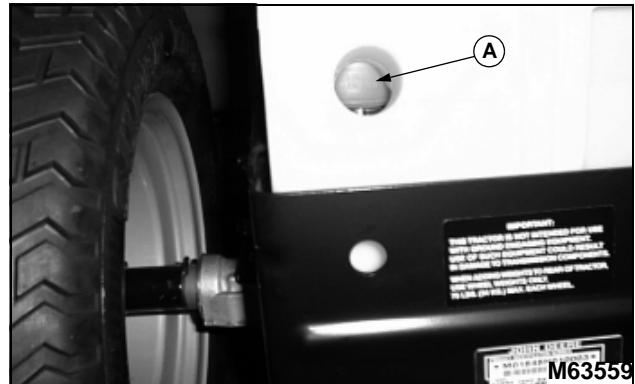
NOTE: Your tractor is filled with 5W30 at the factory

When adding transmission fluid:

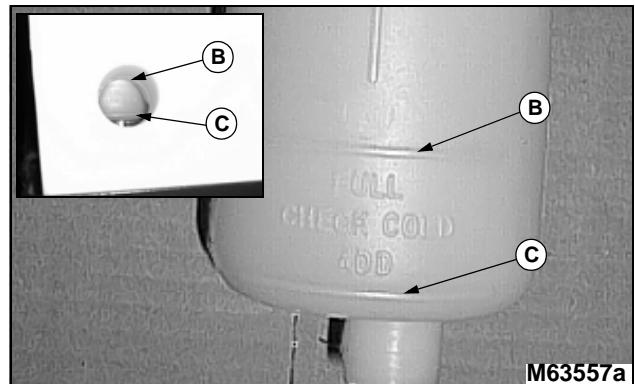
- S2048 use 5W30 or 10W30.
- S2554 use 5W50 Synthetic.

Check Transmission Fluid Level

1. Park machine on level surface.
2. Allow oil in transmission to cool before checking.
3. On the rear of the tractor, there is a sight hole (A) through the left rear side of the fuel tank. The transmission reservoir can be seen through the sight hole.

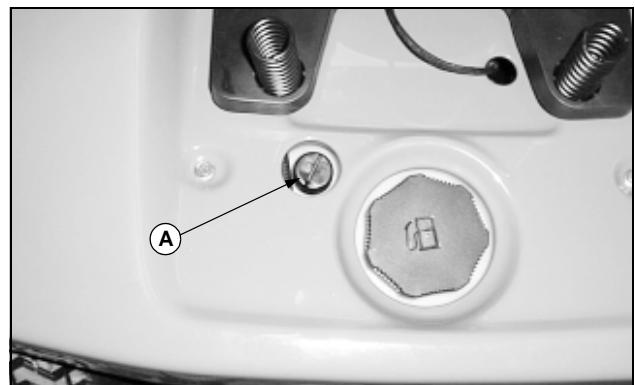


4. Check FULL (B) and ADD (C) marks on the reservoir bottle which will indicate if fluid needs to be added.
5. Add transmission fluid if necessary. (See Adding Transmission Fluid below.)



Adding Transmission Fluid

1. Tip seat forward and slide seat suspension all the way forward.
 2. Remove cap (A) from transmission reservoir. Cap is located under seat and left of fuel cap.
 3. Fill to correct level using specified transmission oil (motor oil). DO NOT OVERFILL.
- S2048 use 5W30 or 10W30.
 - S2554 use 5W50 Synthetic.



SERVICE MOWER

Avoid Injury From Contacting Blades

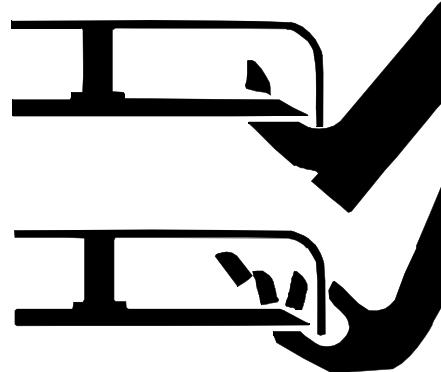


CAUTION: Avoid injury. Before you unplug, adjust or service mower:

- DISENGAGE PTO switch to stop mower blades.
- Wait for mower blades to STOP.
- LOCK the park brake.
- STOP the engine.
- Remove the key.

Clean unit by removing all grass clippings and dirt from mower deck.

Disconnect spark plug wire from spark plug.



Grease

IMPORTANT: Avoid machine damage from use of incorrect grease.

The recommended John Deere greases have an average air temperature range of -29 to 135 degrees C (-20 to 275 degrees F).

If vehicle use will be in air temperature outside that range, contact your Servicing dealer for a special-use grease.

The following greases are preferred:

- John Deere Multi-Purpose SD Polyurea Grease
- John Deere Multi-Purpose HD Lithium Complex Grease
- John Deere Moly High Temperature EP Grease

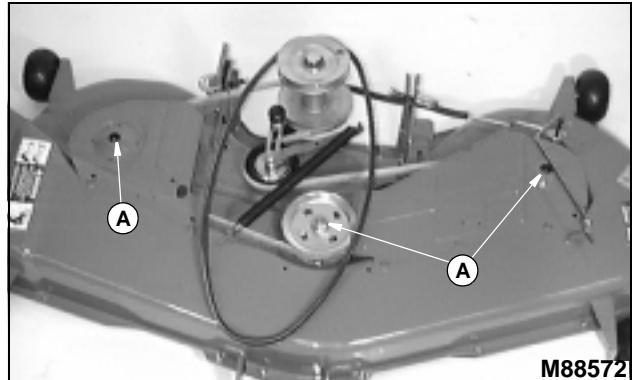
If not using any of the preferred greases, be sure to use a general all purpose grease with an NLGI grade No.2 rating.

Wet or high speed conditions may require use of a special-use grease. Contact your servicing dealer for information.

SERVICE MOWER

Lubricating Mower Spindles

Lubricate three mower spindle grease fittings (A) with a preferred grease or an equivalent.

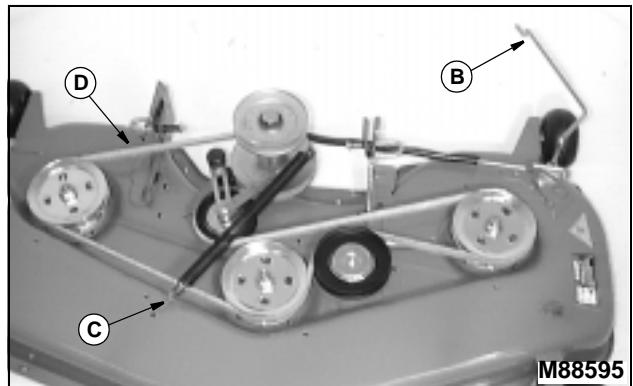
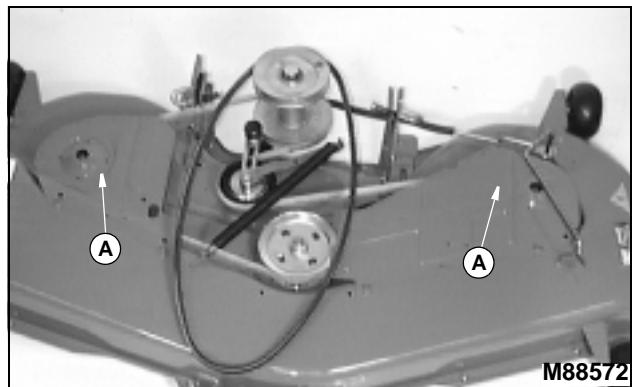


Replacing Mower Drive Belt



CAUTION: Avoid injury: STOP engine and wear gloves when replacing drive belt.

1. Park vehicle safely.
2. Remove mower deck. (See Removing Mower in Removing Mower section.)
3. Remove three cap screws and belt shields (A).
4. Put drive belt tension rod (B) in the released position as shown and disconnect idler spring (C).
5. Remove mower belt (D).
6. Clean upper mower deck and sheaves.
7. Inspect belt for wear or damage; replace as necessary.
8. Install belt (D) on mower deck as shown.
9. Connect idler spring (C).
10. Install two belt shields and fasten with three cap screws.
11. Install mower deck. (See Installing Mower in Installing Mower section.)



SERVICE MOWER

Servicing Mower Blades



CAUTION: Avoid injury. Mower blades have sharp edges. Always wear gloves when handling mower blades.

REMOVING MOWER BLADES

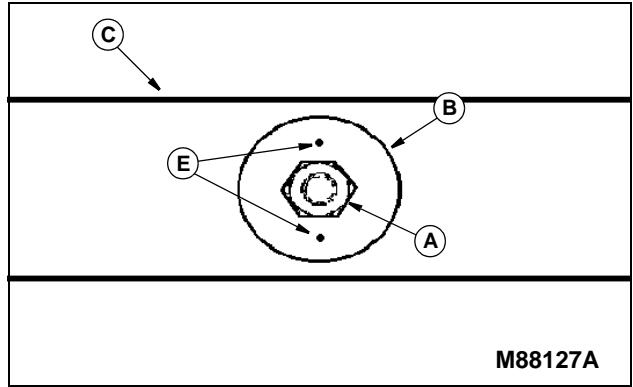
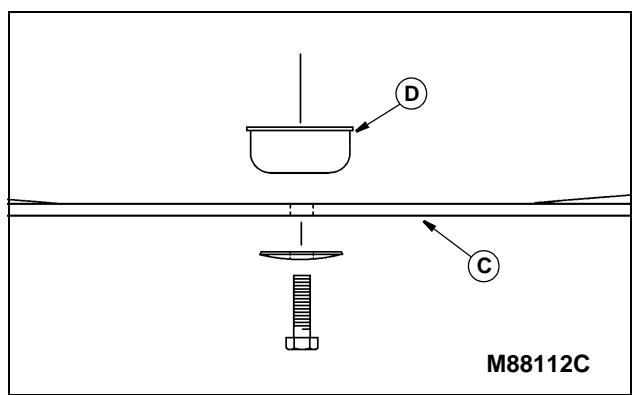
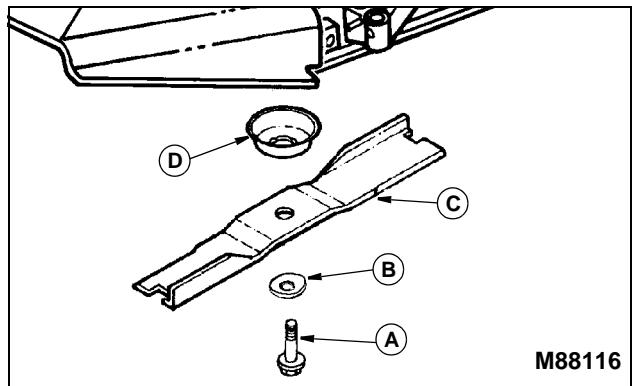
1. Raise mower deck to gain access to mower blades. If necessary, remove mower deck.
2. Use a wooden block to prevent mower blades from spinning.
3. Remove cap screw (A), round blade washer (B), blade (C) and deflector cup (D).
4. Inspect blades; sharpen/balance or replace as necessary.

INSTALLING MOWER BLADES

1. Lightly lubricate cap screw threads with a general purpose grease or oil to prevent rusting and seizing.
2. Install deflector cup (D) on spindle.
3. Position mower blade (C) with the cutting edge towards the ground onto the mower spindle.

IMPORTANT: Avoid machine damage. Some blade washers (B) have two index marks (E). When these blade washers are installed, the index marks must be visible. This will indicate that the cup side of the washer is toward the blade (C).

4. Install blade washers (B) and make sure 2 index marks (E) are visible when installed.
5. Install and tighten cap screw (A) by hand until mower blade is in full contact (fully seated) with spindle.
6. Block mower blade to prevent spinning. Tighten cap screw (A) to 68 N•m (50 lb-ft).



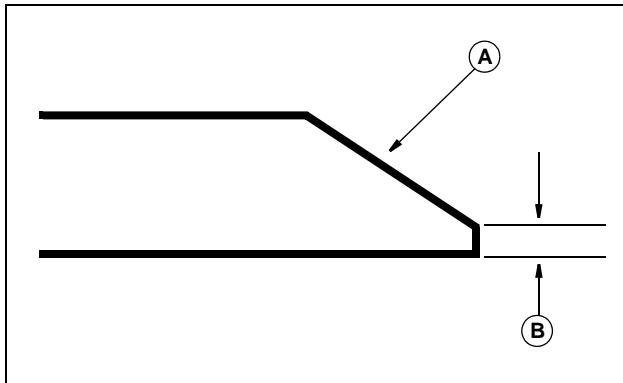
SERVICE MOWER

Sharpening Blades



CAUTION: Avoid injury. Wear goggles and gloves when you handle blades.

1. Sharpen blades with grinder, hand file or electric blade sharpener.
2. Keep original bevel (A) when you grind.
3. Blade should have 0.40 mm (1/64 in.) cutting edge (B).

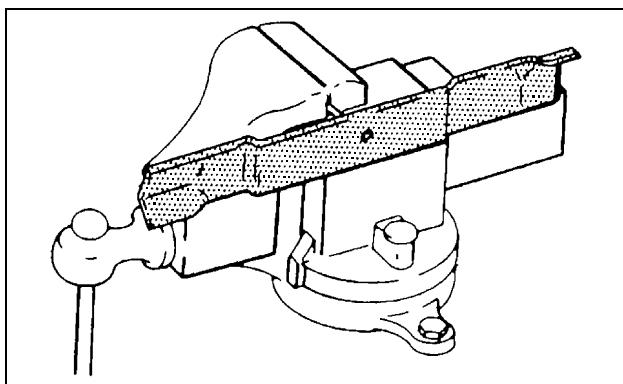


Balancing Blades



CAUTION: Avoid injury. Wear goggles and gloves when you handle blades.

1. Clean blade.
2. Put blade on nail in vise or on vertical wall stud. Turn blade to horizontal position.
3. If blade is not balanced, heavy end of blade will drop.
4. Grind bevel of heavy end. Do not change bevel.

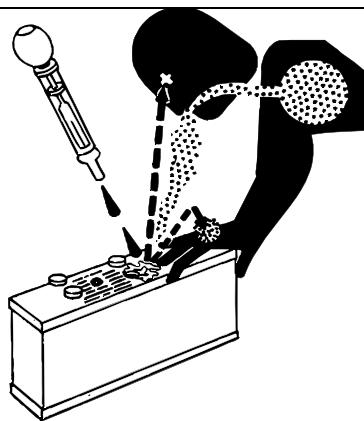


Checking the Battery



CAUTION: Avoid injury. Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

- Wear eye protection and avoid spilling or dripping electrolyte.
- Flush eyes with water for 15-30 minutes if acid is splashed into eyes.
- If acid is swallowed, get medical attention immediately.
- DO NOT attempt to open, add fluid or service battery. Any attempt to do so will void warranty and lead to possible injury.



NOTE: This is a maintenance free battery, do not attempt to open or service battery in any way.

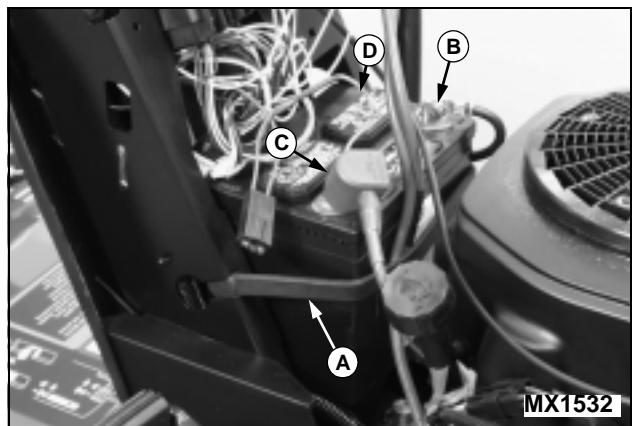
- Keep battery and terminals clean.
- Keep battery bolts tight.
- Keep small vent holes open.
- Recharge, if necessary, at 6–10 amperes for 1 hour.
(See Charging the Battery in this section.)

Removing and Installing the Battery



CAUTION: Avoid injury. Always remove negative (-) battery cable first, and install it last, to prevent electrical short circuit to chassis.

1. Turn ignition key off and raise hood.
2. Remove rubber hold-down strap (A).
3. Disconnect negative (-) battery cable (B).
4. Remove red cover (C) from positive (+) battery terminal. Remove positive (+) cable and blue harness wire (D) from battery.
5. Remove battery.
6. Install the battery following these steps in reverse order. (See Check and Connect the Battery in the Assembly section.)



SERVICE ELECTRICAL

Clean Battery and Terminals

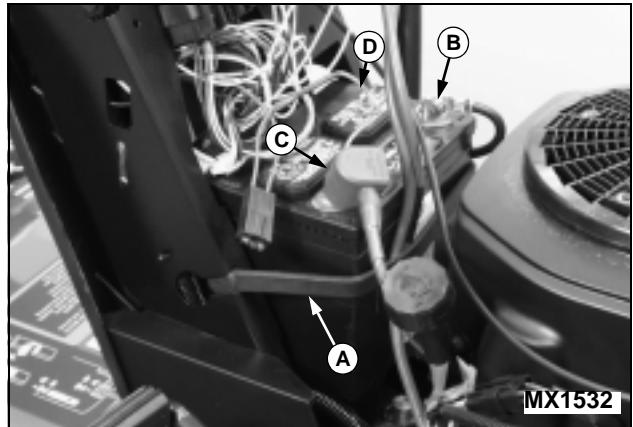


CAUTION: Avoid injury. Battery gas can explode:

- Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.
- Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.
- Always remove grounded (-) battery clamp first and replace it last.



1. Turn ignition key off and lift hood.
2. Remove rubber hold-down strap (A).
3. Disconnect BLACK (-) battery cable (B) first.
4. Disconnect RED (+) battery cable (C) and blue harness wire (D) and remove battery from mower.
5. Wash battery with solution of four tablespoons of baking soda to one gallon of water. Be careful not to get the soda solution into the cells.
6. Rinse the battery with clean water. Let dry.
7. Clean terminals and battery cable ends with wire brush until bright.
8. Apply petroleum jelly or silicone spray to terminal to prevent corrosion.
9. Reinstall battery. (See Removing and Installing the Battery in this section and Check and Connect the Battery in the Assembly section.)

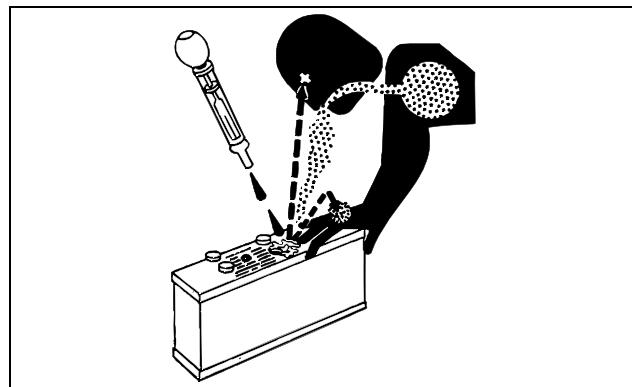


Charging the Battery



CAUTION: Avoid injury. BE VERY CAREFUL:

- Battery fluid (electrolyte), is a solution of water and sulfuric acid. It is very harmful to eyes, skin, and clothing.
- Wear goggles or an eye shield when you work with a battery.
- If the acid contacts your eyes, skin, or clothing, flush the area immediately with water. Get medical help, if necessary.
- A battery gives off gas which can explode. An exploding battery will spray sulfuric acid in all directions.
- Keep cigarettes, sparks, and flames away from the battery.
- Charge the battery in an area with good ventilation.
- DO NOT charge a frozen battery.



Before you charge a battery:

- Wait until the battery has warmed to room temperature. Do not charge a frozen battery.

Turn OFF and unplug the charger before you connect cables to the battery or disconnect cables from the battery.

If the battery becomes warm to touch during charging:

- Reduce the charging rate OR

NOTE: Your charger may have an AUTOMATIC STOP to prevent charging the battery:

- Stop charging the battery until it cools.
- When the battery is fully charged OR
- When the battery is not in condition to take a charge.

SERVICE ELECTRICAL

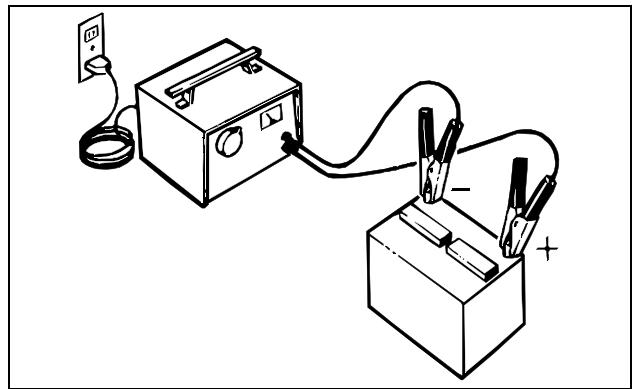


CAUTION: Avoid injury. DO NOT attempt to open, add fluid or service battery. Any attempt to do so will void warranty and lead to possible injury.

Battery gas is explosive:

- DO NOT smoke while you charge battery.
- Keep all flames and sparks away.
- DO NOT charge frozen battery.
- DO NOT connect booster battery negative (-) cable to starting vehicle negative (-) terminal.

1. Remove battery from mower. (See Removing and Installing Battery in this section.)
2. Connect positive (+) charger cable to positive (+) battery terminal.
3. Connect negative (-) charger cable to negative (-) battery terminal.
4. Plug in charger cord.
5. Charge battery using a 12 Volt battery charger at a rate of 6–10 amperes for a minimum of 1 hour and no more than 2 hours.
6. Unplug charger cord. Remove charger cables.
7. Install battery. (See Removing and Installing Battery in this section.)



SERVICE ELECTRICAL

Using Booster Battery

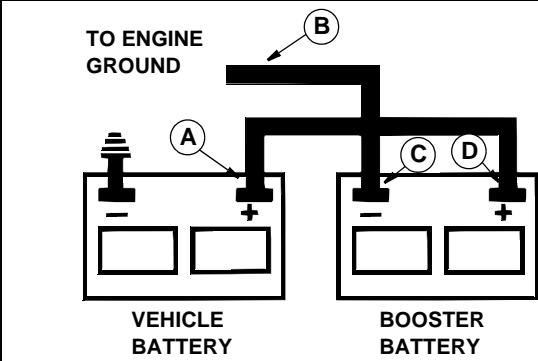


CAUTION: Avoid injury. Battery gas is explosive:

- DO NOT smoke while you charge battery.
- Keep all flames and sparks away.
- DO NOT charge frozen battery.
- DO NOT connect booster battery negative (-) cable to starting vehicle negative (-) terminal.



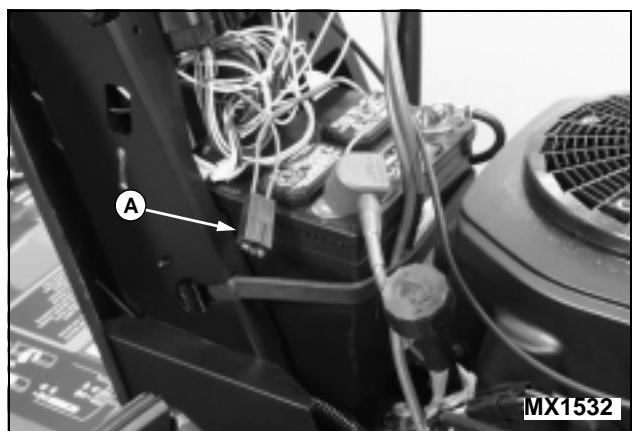
1. Connect positive (+) booster cable to booster battery positive (+) post (D).
2. Connect the other end of positive (+) booster cable to vehicle battery positive (+) post (A).
3. Connect negative (-) booster cable to booster battery negative (-) post (C).
4. Connect the other end of negative (-) booster cable (B) to engine ground away from battery.



Replacing Fuse

IMPORTANT: Avoid machine damage. When replacing fuse - use the proper replacement fuse or damage to the circuit may occur.

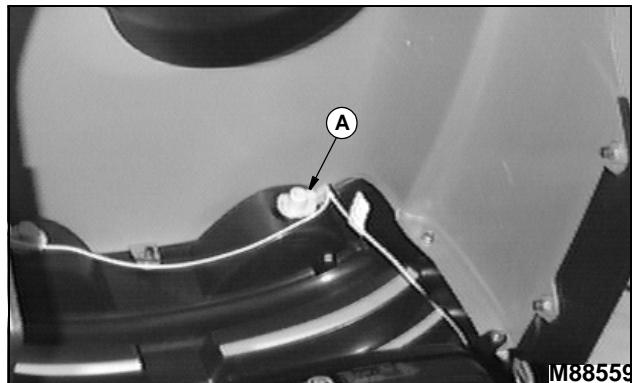
1. Lift hood.
2. Pull defective fuse (A) out of socket.
3. Check metal clip in fuse window and discard fuse if clip is broken.
4. Push new fuse into socket.
5. Lower hood.



SERVICE ELECTRICAL

Replacing Headlight Bulb

1. Lift hood.
2. Push in and turn bulb socket (A) 1/4 turn counterclockwise to remove.
3. Replace defective bulb(s) with a new bulb.
4. Insert bulb socket into housing, push in and turn 1/4 turn clockwise to install.
5. Lower hood.

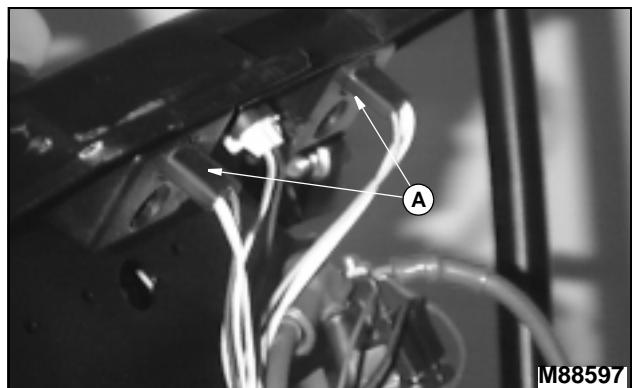


M88559

Replacing Battery Discharge and Oil Pressure Indicator Light Bulbs

NOTE: If more than one bulb is defective, replace only one bulb at a time. Make sure light socket is installed in correct holder.

1. Lift hood.
2. Turn indicator bulb socket(s) (A) 1/8 turn counterclockwise to remove it.
3. Pull bulb(s) from socket(s).
4. Push new bulb(s) into socket(s) and install socket(s) into holder.
5. Lower hood.



M88597

SERVICE MISCELLANEOUS

Checking Tire Pressure



CAUTION: Avoid injury. Explosive separation of a tire and rim parts can cause serious injury or death:

- Do not attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



1. Check tires for damage.
2. Check tire pressure with an accurate gauge.
3. Add or remove air, if necessary:

Tire Size	Pressure
Model S2048: Front = 16 x 6.5 x 8 Rear = 23 x 9.50 x 12	97 kPa (14 psi) 83 kPa (12 psi)
Models S2554: Front = 16 x 7.5 x 8 Rear = 24 x 12 x 12	83 kPa (12 psi) 69 kPa (10 psi)

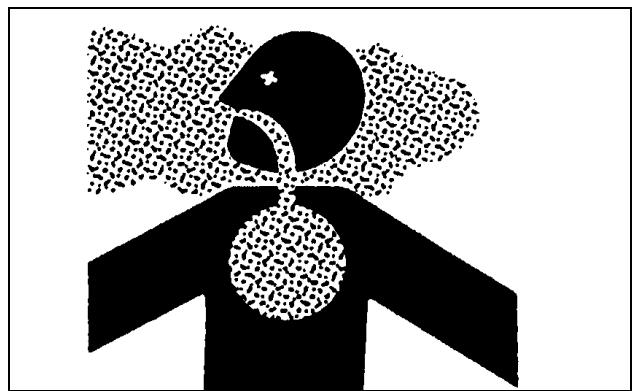
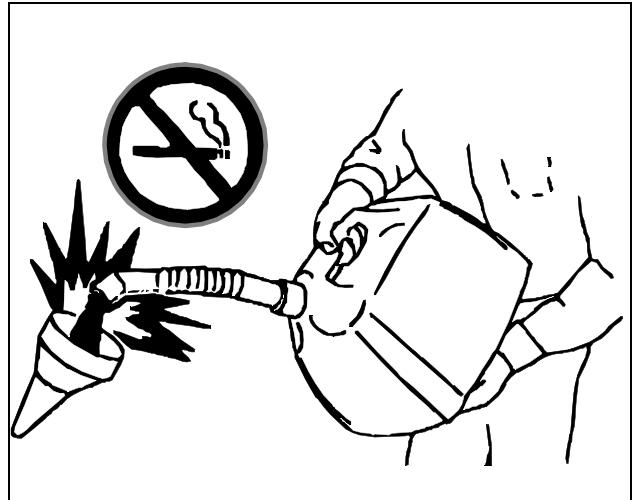
SERVICE MISCELLANEOUS

Fuel



CAUTION: Avoid injury. Handle fuel with care, it is highly flammable and can cause serious injury or death:

- DO NOT refuel machine while you smoke, when machine is near an open flame or sparks, or when engine is running. STOP engine.
- Fill fuel tank outdoors.
- Prevent fires: clean oil, grease and dirt from machine. Clean up spilled fuel immediately.
- Do not store machine with fuel in tank in a building where fumes may reach an open flame or spark.
- To prevent fire and explosion caused by static electric discharge, while you fill tank, use a non-metal fuel container. If you use a funnel, MAKE SURE IT IS PLASTIC. Avoid using a funnel which has a metal screen or filter.
- Use only clean approved containers and funnels.
- Store oil and fuel in an area protected from dust, moisture and other contamination.
- DO NOT use METHANOL gasoline. METHANOL is harmful to the environment and to your health.



IMPORTANT: Avoid machine damage which can result from spilt fuel. Fuel can damage plastic and painted surfaces.

DO NOT mix oil with gasoline. Unleaded gasoline with an octane rating of 87 or higher is recommended.

Using Clean Fuels

Dirt in the fuel system is a major cause of performance problems. Be sure to clean any grass or trash from the top of the tank before removing lid. Use of a PLASTIC funnel with a plastic mesh strainer when filling the tank will prevent most foreign material from entering the tank.

SERVICE MISCELLANEOUS

Octane Rating

Regular grade 87 octane unleaded fuel is recommended for use in your tractor. Higher octane fuels will seldom make your tractor perform better. If your tractor develops a starting or performance problem immediately after use of new fuel, change supplier or fuel brand. If the problem still exists after switching fuel, see your Authorized Service Center for service.

Fuel Blends

Fuels are blended to give peak performance during cold weather and warm weather. For cold weather, gasoline is specially blended to provide better starting capabilities. However, avoid prolonged storage of cold-weather blended fuel because it will evaporate more quickly. You may experience longer cranking times in cold weather with "old" fuel. Buy smaller amounts of cold-weather blended fuel in winter.

Fuels used during the summer are not required to provide improved starting properties so they are blended differently. As a result, you may experience hard starting or other performance problems during cold weather if you use fuel remaining from summer uses.

Oxygenated or Reformulated Fuels

Many areas are now required to add "oxygenates" (either alcohol or ether) which blend oxygen into the fuel to help reduce exhaust emissions. If you use oxygenated fuel be sure it is unleaded and meets the minimum octane rating requirement. DO NOT use fuel that contains methanol to avoid producing excess emissions.

Although fuels blended with alcohol or ether allow your engine to run cleaner, they may contribute to fuel system damage and performance problems by causing gum and varnish deposits, especially if fuel is stored for several weeks or more.

Using clean, fresh fuel will help to prevent damage to the fuel system and will help maintain peak engine performance. If engine performance problems occur, use fuel from another supplier before suspecting machine problems. Suppliers blend fuels differently and changing suppliers will generally solve any performance problems.

SERVICE MISCELLANEOUS

Using Fresh Fuel and Stabilizers

The best thing you can do to ensure peak performance of your engine is to use “fresh” fuel. Your tractor’s engine will perform well with most good-quality fresh fuels regardless of additives. Any fuel will begin to deteriorate and evaporate over time and begin to form gum and varnish deposits in the fuel system. Help to avoid this by buying only enough fuel to last approximately 30 days or add fuel stabilizer immediately.

Adding a fuel stabilizer to the fuel system is recommended any time the tractor will not be operated for more than 60 days. Varnish deposits may build up in the carburetor in as little as a few weeks by using stale, oxygenated fuel.

No stabilizer will work with “stale” fuel, any fuel that is more than 30 days old. (See Preparing Engine For Storage in the Storing Machine section for information on adding stabilizer to the fuel.)

Filling Fuel Tank

IMPORTANT: Avoid machine damage. Dirt and water in fuel are major causes of engine performance problems. Prevent dirt and debris from entering the fuel tank when filling.

Fill the tank at the end of each day's operation to help keep condensation out of the fuel tank.

Fuel tank capacity: 11 L (3.0 gal)

1. STOP engine. If engine is hot let it cool several minutes before you add fuel.
2. Remove grass clippings and other trash from tank area.
3. Lift seat and remove fuel tank cap (A).
4. Fill tank with fresh fuel only to bottom of filler neck.
5. Install fuel tank cap and lower seat.



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SERVICE MISCELLANEOUS

Grease

IMPORTANT: Avoid machine damage from use of incorrect grease.

The recommended John Deere greases have an average air temperature range of -29 to 135 degrees C (-20 to 275 degrees F).

If vehicle use will be in air temperature outside that range, contact your Servicing dealer for a special-use grease.

The following greases are preferred:

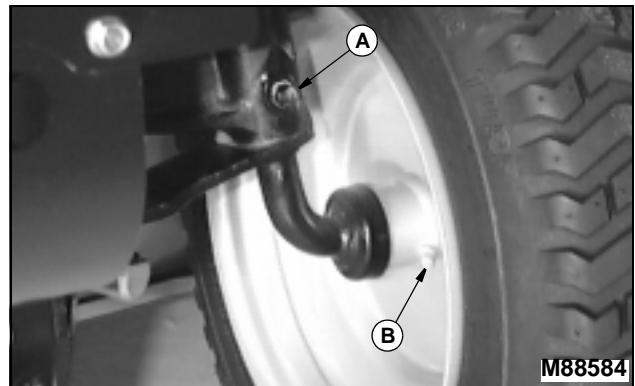
- John Deere Multi-Purpose SD Polyurea Grease
- John Deere Multi-Purpose HD Lithium Complex Grease
- John Deere Moly High Temperature EP Grease

If not using any of the preferred greases, be sure to use a general all purpose grease with an NLGI grade No.2 rating.

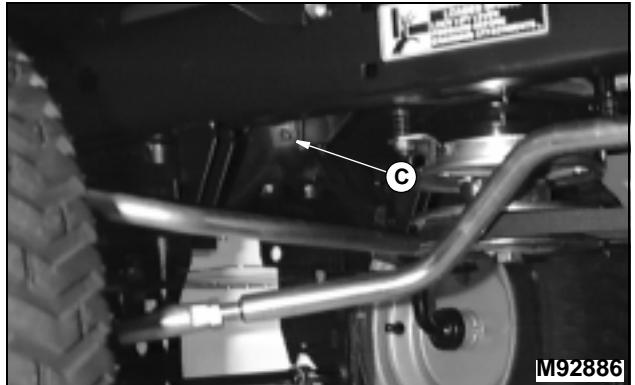
Wet or high speed conditions may require use of a special-use grease. Contact your servicing dealer for information.

Lubricating Front Wheel Spindles, Wheel Bearings and Front Axle Pivot

Lubricate front wheel spindles (A), wheel bearings (B), one on each side of tractor, and front axle pivot (C) with a preferred grease or an equivalent.



Turn wheels to distribute grease to spindles.



SERVICE MISCELLANEOUS

Care for Plastic and Painted Surfaces

PLASTIC SURFACES

The plastic parts on your tractor are made of a blend of polycarbonate and polyester materials. These parts are extremely strong and durable. Unlike painted metal, the plastic parts will never dent or rust. If the plastic parts get scratched, the color will remain the same since the color goes through the entire part.

IMPORTANT: Avoid machine damage. “Dry wiping” or wiping the plastic surface when it is dry will result in minor surface scratches. Always wet the surface before cleaning. Follow correct cleaning and waxing procedures.

Correct Cleaning Care:

NOTE: Follow cleaning procedure every time plastic surfaces are cleaned. DO NOT wipe dry plastic surface with hand or towel.

1. Before washing, rinse hood and entire machine with clean water to remove dirt and dust that may scratch the surface.
2. Wash plastic surface with clean water and a mild liquid automotive washing soap. Use a SOFT, CLEAN cloth (bath towel or automotive mitt) when washing.
3. Dry thoroughly with a SOFT, CLEAN cloth (diaper or bath towel).
4. Wax the surface with a liquid automotive wax. Use products that specifically say “contains no abrasives”.
5. Remove applied wax by hand using a clean, soft cloth.

Avoid Damage:

- “Dry wiping” or wiping the plastic surface when it is dry is a major source of minor surface scratches.
- DO NOT wipe hood or other plastic parts unless wetted first.
- DO NOT apply wax unless plastic surface has been thoroughly cleaned first.
- DO NOT use abrasive materials, such as polishing compounds, to clean or to wax plastic surface.
- DO NOT wax plastic surfaces without drying first. Hard-to-remove water spots will be left.
- DO NOT use solvents or commercial cleaners.

SERVICE MISCELLANEOUS

- DO NOT use power buffers to remove wax.
- DO NOT spray insect repellent near machine. Insect repellent spray may damage plastic or painted surfaces.
- Be careful not to spill fuel on any plastic or painted surfaces. Wipe up fuel immediately.

Repair:

- Your Authorized Service Center has the professional materials needed to properly remove surface scratches from any plastic surfaces.
- DO NOT attempt to paint over marks or scratches in plastic parts.
- DO NOT use polishing compounds to attempt to remove scratches.

PAINTED METAL SURFACES

Correct Cleaning Care:

Follow automotive practices to care for your tractor painted metal surfaces. Use a high-quality automotive wax regularly to maintain the factory look of your tractor's painted surfaces.

Repair:

Minor Scratches (surface scratch):

1. Clean area thoroughly to be repaired.
2. Use automotive polishing compound to remove surface scratches.
 - DO NOT use rubbing compound to avoid removing paint.
3. Apply wax to entire surface.

Deep Scratches (bare metal or primer showing):

1. Clean area to be repaired with rubbing alcohol or mineral spirits.
2. Use paint stick with factory-matched colors available from your Authorized Service Center to fill scratches.

Follow directions for use and for drying.

- Apply sparingly to scratch without getting on surrounding painted surface. Fill in scratch to level of surrounding painted area.
- Allow to dry 48 hours in warm weather and up to 30 days in colder temperatures.

3. Use automotive polishing compound to smooth out surface. Do not use power buffer.
4. Apply wax to surface.

REMOVING MOWER

Removing Mower



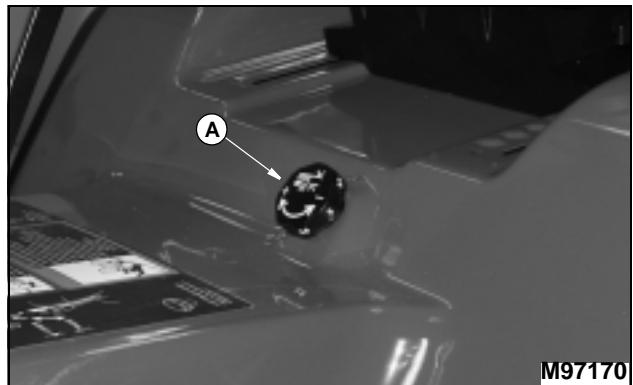
CAUTION: Avoid injury.

Before removing mower from machine: STOP engine. Remove key. Wait for all moving parts to STOP.

Avoid injury from loaded spring: LOCK lift lever before removing mower.

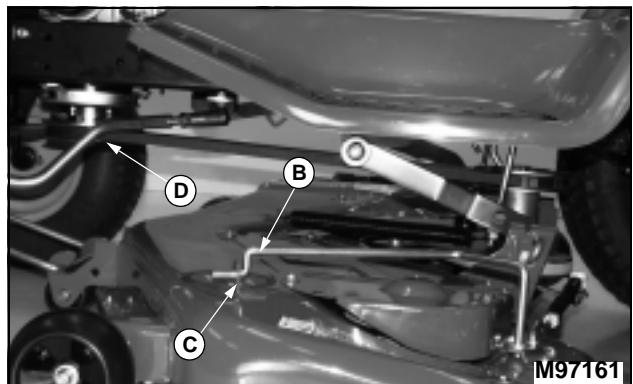
Avoid injury from spring loaded rod: Make sure you have a tight grip on drive belt tension rod and release slowly.

1. STOP engine, LOCK park brake, push PTO switch down to DISENGAGE, turn key to the OFF position, and remove key.
2. Raise mower lift lever to TRANSPORT (upper) position.
3. Set cutting height knob (A) to 25 mm (1 in.).
4. Put wood blocks under each side of mower.
5. Lower mower to MOWING (lower) position, bring deck down onto blocks.



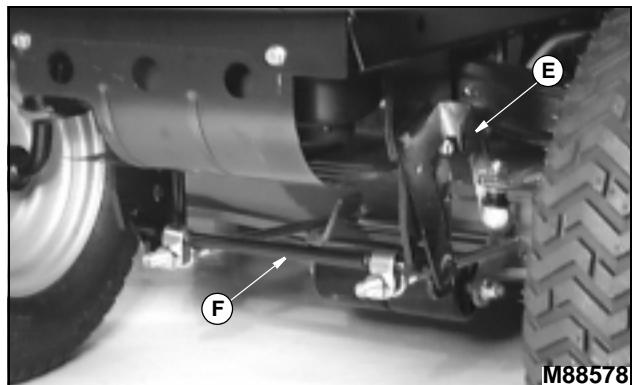
Picture Note: 48-Inch Deck used for photo purposes.

6. Release drive belt tension rod (B) from bracket (C).
7. Remove belt from engine drive sheave (D).



REMOVING MOWER

8. Pull out and push down on lever (E) to release front lift rod assembly (F) and remove from front of deck.



Picture Note: 48-Inch Deck used for photo purposes.

9. Disconnect draft arms, one on each side, by pulling spring loaded J-pins (G) out.
10. Put mower lift lever in the TRANSPORT (upper) position.
11. Slide mower out from under the tractor.



INSTALLING MOWER

Installing Mower



CAUTION: Avoid injury

Before installing mower on machine: STOP engine. Remove key. Wait for all moving parts to STOP.

Avoid injury from loaded spring: LOCK lift lever before installing mower.

Avoid injury from spring loaded rod: Make sure you have a tight grip on drive belt tension rod when installing.

1. STOP engine, LOCK park brake, push PTO switch down to DISENGAGE, turn key to the OFF position, and remove key.

2. Raise mower lift lever to TRANSPORT (upper) position.

3. Slide mower under the tractor and line up mower lift brackets with rear draft arms.

4. Put wood blocks under each side of mower.

5. Put mower lift lever in the MOWING (lower) position.

Picture Note: 48-Inch Deck used for photo purposes.

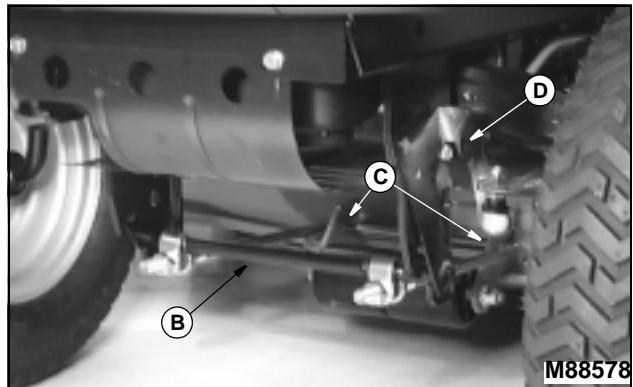
6. Install rear draft arms, one on each side of tractor, to mower lift brackets with spring loaded J-pins (A).



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7. Put front lift rod assembly (B) in slotted brackets (C) on mower deck and install the front lift rod assembly to the front of the tractor frame.

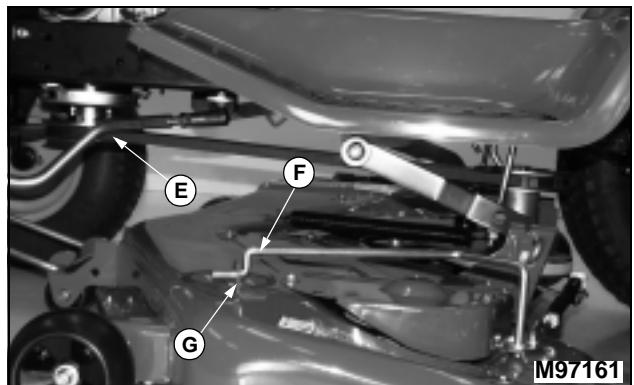
8. Push up on lever (D) and lock into tractor frame.



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INSTALLING MOWER

9. Put mower drive belt (E) on engine drive sheave.
10. Push drive belt tension rod (F) into bracket (G).
11. Raise mower lift lever to TRANSPORT (upper) position.
12. Remove wood blocks from both sides of mower.
13. Level mower. (See Leveling Mower in Operating the Mower section.)



TROUBLESHOOTING

Using Troubleshooting Chart

If you are experiencing a problem that is not listed in this chart, see your Authorized Service Center for service.

When you have checked all the possible causes listed and you are still experiencing the problem, see your Authorized Service Center.

Engine

IF	CHECK
Engine Will Not Crank	Brake is not pushed down. Loose or corroded electrical connections. PTO knob is in ON position. Fuse is blown. Battery is low.
Engine Runs Unevenly	Cooling fins plugged. Spark plug wire is loose or disconnected. Loose electrical connections. Choke or throttle cable sticking or misadjusted choke left in the ON position. Air cleaner dirty. Water in fuel or carburetor float bowl. Dirt in carburetor float bowl.
Engine Will Not Idle	Spark plug not gapped correctly. Faulty spark plug. Choke on or partially on (warm engine).
Engine Misses Under Load	Faulty spark plug. Stale fuel. Dirt or water in carburetor float bowl.
Engine Vapor Locks	Fuel tank vent plugged. Dirt in fuel filter. Debris plugging fuel pick-up tube inside fuel tank.

TROUBLESHOOTING

IF	CHECK
Engine Is Hard To Start	Fuel filter is gummed or plugged. Spark plug is fouled. Faulty spark plug or wire. Spark plug is not gapped correctly. Loose or corroded electrical connections. Stale fuel. Choke is adjusted or used incorrectly.
Engine Overheats	Engine air intake screen plugged. Cooling fins plugged. Engine oil low. Engine operated too long at slow idle speed.
Engine Loses Power	Engine overheating. Too much oil in engine. Dirty air cleaner. Faulty spark plug.
Engine Knocks	Low engine speed. Stale or low octane fuel. Engine overloaded. Oil level low.
Engine Backfires	Faulty spark plug. Operator raising off seat. Shut down procedure for engine not correct.
Engine Stops When REVERSE foot pedal is depressed and Attachment Is Engaged	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

TROUBLESHOOTING

Tractor

IF	CHECK
Tractor Vibrates Too Much	Attachment drive belts worn or damaged.
	Dirt on drive sheaves.
Tractor Will Not Move With Engine Running	Transmission hydraulic oil level low.
	Parking brake locked.
Tractor Moves With Engine Running And Hydrostatic Control In Neutral	Linkage out of adjustment.

Electrical

IF	CHECK
Starter Does Not Work Or Will Not Turn Engine	Brake pedal not down.
	PTO knob in ON position.
	Battery terminals corroded.
	Battery dead or low charge.
Battery Will Not Charge	Battery cables and terminals dirty.
	Low engine speed or excessive idling.
	Dead cell in battery.

Mower

IF	CHECK
Discharge Chute Plugging	Belt installed incorrectly.
	Grass too wet.
	Grass too long.
	Restricted air flow.
	Check mower front-to-rear level.
	Engine rpm too low.
	Travel speed too fast.

TROUBLESHOOTING

IF	CHECK
Requires High Effort To Lift And Latch Lift Handle	Front draft arm on mower is adjusted too short, causing lift system to bind up.
Patches Of Grass Uncut	Travel speed too fast.
	Engine rpm too low.
Belt Slipping	Debris in sheaves.
	Worn belt.
Too Much Vibration	Debris on mower deck or in sheaves.
	Damaged drive belt.
	Damaged sheaves or sheaves out of alignment.
	Blades out of balance.
Blades Scalping Grass	Cutting too low.
	Turning speed too fast.
	Ridges in terrain.
	Rough or uneven terrain.
	Low tire pressure.
	Mower gauge wheels not adjusted correctly.
Uneven Cut	Bent blade(s).
	Mower not level.
	Travel speed too fast.
	Blades dull.
	Mower gauge wheels not adjusted correctly.
Mower Loads Down Tractor	Tire pressure.
	Engine rpm too low.
	Travel speed too fast.
	Debris wrapped around mower spindles.
Grass Tips Are Jagged And Turn Grayish Brown After Mowing	Bagging blades on mower.
	Dull mower blades.
	Bent blades.
	Front-to-rear blade adjustment not set properly.

TROUBLESHOOTING

IF	CHECK
Mower (or other attachment) Stops When REVERSE foot pedal is depressed and Attachment Is Engaged	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

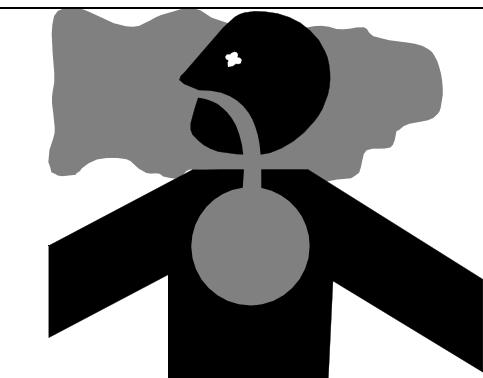
STORING MACHINE

Storing Safely



CAUTION: Avoid injury. Engine exhaust fumes can cause sickness or death.

- If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove the fumes.
- Always work in a well ventilated area.
- DO NOT store vehicle with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow engine to cool before storing in an enclosure.
- Remove the battery and store it in a cool dry place where it will not freeze, and where children cannot reach it.



Preparing Machine for Storage

1. Repair any worn or damaged parts. Replace parts if necessary. Tighten loose hardware.
2. Clean under the deck.
3. Paint scratched or chipped metal surfaces to prevent rust.
4. Wash the machine and apply wax to metal and plastic surfaces. (See SERVICE-MISCELLANEOUS section for care of plastic and metal surfaces.)
5. Run machine for five minutes to dry belts and pulleys.
6. Apply light coat of engine oil to pivot and wear points to prevent rust.
7. Lubricate grease points.
8. Make sure tires are properly inflated.

STORING MACHINE

Preparing Engine For Storage

NOTE: Properly preparing your tractor engine for storage will make it easier to start the following season. Engine storage procedure should be used if vehicle is not used for longer than 60 days.

There are two satisfactory methods of preparing the engine for storage: running the engine completely dry of fuel, or filling the fuel tank with a mixture of fresh fuel and fuel stabilizer.

Running engine dry of fuel:

NOTE: Try to anticipate the last time the tractor will be used for the season so very little fuel is left in the fuel tank.

1. Park tractor in a well-ventilated area.
2. Engage park brake and disengage PTO.
3. Start engine and allow to run until it runs out of fuel.
4. Turn key to OFF position.
5. Continue with Preparing Engine.

Add fuel and stabilizer mixture to tank:

1. Park tractor in a well-ventilated area.

IMPORTANT: Avoid machine damage. Be sure fuel is fresh when adding fuel stabilizer. Fuel stabilizers are ineffective when added to fuels that are more than 30 days old.

2. Mix fresh fuel and fuel stabilizer in separate container. Follow stabilizer instructions for mixing.

NOTE: Filling the fuel tank reduces the amount of air in the fuel tank and helps reduce deterioration of fuel.

3. Fill fuel tank with stabilized fuel.
4. Run engine for a few minutes to allow fuel mixture to circulate through carburetor.
5. Continue with Preparing Engine.

STORING MACHINE

Preparing Engine:

1. Change engine oil and filter while engine is warm.
2. Service air filter if necessary.
3. Clean debris from engine air intake screen.
4. Remove spark plugs. Put 30 mL (1 oz.) of clean engine oil in cylinders.
5. Install spark plugs, but DO NOT connect spark plug wires.
6. Crank the engine for approximately five seconds to allow oil to be distributed.
7. Clean the engine and engine compartment.
8. Remove battery.
9. Clean the battery and battery posts.

NOTE: The stored battery should be recharged every 90 days.

10. Charge the battery. (See Charging Battery in the SERVICE - ELECTRICAL section.)
11. Store the battery in a cool, dry place where it will not freeze.
12. Store the vehicle in a dry, protected place. If vehicle is stored outside, put a waterproof cover over it.

Removing Machine From Storage

1. Check tire pressure. (See Checking Tire Pressure in Service - Miscellaneous section.)
2. Fill fuel tank. Check engine oil level.
3. Charge battery if necessary. Install battery. (See Removing and Installing the Battery in the SERVICE-ELECTRICAL section.)
4. Check spark plug gap. Install and tighten spark plug to 24.4/29.8 N•m (18/22 lb-ft).
5. Lubricate all grease points.
6. Check transmission oil level.
7. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.
8. Be sure all shields and guards are in place.

SPECIFICATIONS

Engine (Automatic-S2048)

Engine Manufacture	Kohler
Engine Model Number	CV20S
Horsepower	14.9 kW ((20 hp))
Displacement	624 cc ((38.1 cu.in.))
Crankcase Capacity with oil filter	1.9 L ((2.0 qt.))
Spark Plug-Gap	0.76 mm ((.030 in.))
Spark Plug-Torque	24.4-29.8 N·m ((18-22 lb-ft.))
Cylinders	Two
Stroke/Cycle	Four
Lubrication	Full-Pressure
Oil Filter	Standard Single Element
Cooling Type	Air
Air Cleaner	Dual Stage

Engine (Automatic-S2554)

Engine Manufacturer	Kohler
Engine Model Number	CV25S
Horsepower	18.6 kW ((25 hp))
Displacement	725 cc ((44.0 cu.in.))
Crankcase Capacity with oil filter	2.0 L ((2.1 qt.))
Spark Plug-Gap	0.76 mm ((.030 in.))
Spark Plug-Torque	24.4-29.8 N·m ((18-22 lb-ft.))
Cylinders	Two
Stroke/Cycle	Four
Lubrication	Full-Pressure
Oil Filter	Standard Single Element
Cooling Type	Air
Air Cleaner	Dual Stage

Fuel System

Fuel	See Fuel in the Service Miscellaneous section
Fuel Filter	Replaceable
Fuel Tank Capacity	11 L ((3.0 gal.))

SPECIFICATIONS

Transaxle

Model S2048	TuffTorq Model K-62
Model S2554	TuffTorq Model K-66
Drive Train	Transaxle with foot-controlled variable speed drive
Travel Speed-Forward	0-8.8 km/h ((0-5.5 mph))
Travel Speed-Reverse	0-3.5 km/h ((0-2.5 mph))

Dimensions-Model S2048

Overall Height	114.0 cm ((44.9 in.))
Overall Length	182.9 cm ((72 in.))
Vehicle Weight	259 kg ((570 lb.))

Dimensions-Model S2554

Overall Height	115.7 cm ((45.6 in.))
Overall Length	183.6 cm ((72.3 in.))
Vehicle Weight	275 kg ((606 lb.))

Tires

Size-Front-Model S2048	16 X 6.5 X 8
Size-Rear-Model S2048	23 X 9.5 X 12
Tire Pressure-Front-Model S2048	97 kPa ((14 psi))
Tire Pressure-Rear-Model S2048	83 kPa ((12 psi))
Size-Front-Model S2554	16 X 7.5 X 8
Size-Rear-Model S2554	24 X 12 X 12
Tire Pressure-Front-Model S2554	83 kPa ((12 psi))
Tire Pressure-Rear-Model S2554	69 kPa ((10 psi))

SPECIFICATIONS

Mower Deck (48-inch)

Blades-Rotary	3
Blade Bolt Torque	68 N•m ((50 lb-ft))
Cutting Height-Approx.	25–102 mm ((1–4 in.))
Blade Length	423 mm ((16.6 in.))
Cutting Width	1219 mm ((48 in.))

Mower Deck (54-inch)

Blades-Rotary	3
Blade Bolt Torque	68 N•m ((50 lb-ft))
Cutting Height-Approx.	25–102 mm ((1–4 in.))
Blade Length	474 mm ((18.7 in.))
Cutting Width	1372 mm ((54 in.))

(Specifications and design subject to change without notice.)

WARRANTY

LIMITED WARRANTY FOR NEW SCOTTS BRAND PRODUCTS

Manufactured by John Deere

(U.S. Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Company ("John Deere") to the original purchasers of new Scotts Brand Products Manufactured by John Deere. Under these warranties, John Deere will repair or replace, at its option, any covered part which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or service center authorized by John Deere to service the type of product involved, which will use only new or remanufactured parts or components furnished by John Deere. Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, for any premium charged for overtime labor requested by the purchaser and for any service and/or maintenance not directly related to any defect covered under the warranties below.

B. WHAT IS WARRANTED - All parts of any new Scotts Brand Product Manufactured by John Deere, except batteries, are warranted for the number of months or operating hours specified below. Warranty statements required by law covering engine emission-related parts and components, are found in the Operator's Manual delivered with the machine.

EQUIPMENT USE	WARRANTY TERM
1) IN RESIDENTIAL (Private Homeowner) APPLICATION	24 Months
2) IN ANY OTHER APPLICATION	90 Days

Each warranty term begins on the date of product sale to the purchaser.

C. WHAT IS NOT WARRANTED - JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used products; (2) Any product that has been altered or modified in ways not approved by John Deere; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage or accident; (4) Normal maintenance parts and service.

D. SECURING WARRANTY SERVICE - To secure warranty service, the purchaser must (1) report the product defect to an authorized dealer and request repair within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within a reasonable period of time.

E. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES - SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE - to the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the Scotts Brand Products Manufactured by John Deere covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF WARRANTY SET FORTH ON THIS PAGE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE ARE THOSE SET FORTH ON THIS PAGE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY

WARRANTY

COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

F. NO DEALER WARRANTY - THE SELLING DEALER MAKES NO WARRANTY OF ITS OWN AND THE DEALER HAS NO AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISE ON BEHALF OF JOHN DEERE, OR TO MODIFY THE TERMS OR LIMITATIONS OF THIS WARRANTY IN ANY WAY.

G. FAILURE DUE TO IMPROPER SET-UP IS NOT COVERED UNDER WARRANTY.

H. If further information is desired, contact a servicing dealer. For the location of servicing dealers in your area call 1-877-356-3698.

LIMITED WARRANTY FOR NEW SCOTTS BRAND PRODUCTS

Manufactured by John Deere

(Canada Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Limited ("John Deere") to the original purchasers of new Scotts Brand Products Manufactured by John Deere. Under these warranties, John Deere will repair or replace, at its option, any part covered under these warranties which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or service center authorized by John Deere to service the type of product involved, which will use only new or remanufactured parts or components furnished by John Deere. Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, except where prohibited by law, for any premium charged for overtime labor requested by the purchaser and for any service and/or maintenance not directly related to any defect covered under the warranties below.

B. WHAT IS WARRANTED - Subject to paragraph C below, all parts of any new Scotts Brand Product Manufactured by John Deere, except batteries, are warranted for the number of months or days specified below. Warranty statements required by law covering engine emission-related parts and components, if any, are found in the Operator's Manual delivered with the product.

EQUIPMENT USE	WARRANTY TERM
1) IN RESIDENTIAL (Private Homeowner) APPLICATION	24 Months
2) IN ANY OTHER APPLICATION	90 Days

Each warranty term begins on the date of product sale to the purchaser.

C. WHAT IS NOT WARRANTED - JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used products; (2) Any product that has been altered or modified in ways not approved by John Deere; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage or accident; (4) Normal maintenance parts and service

WARRANTY

D. SECURING WARRANTY SERVICE - To secure warranty service, the purchaser must (1) report the product defect to an authorized dealer and request repair or replacement within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within a reasonable period of time.

E. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES - SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE - TO THE EXTENT PERMITTED BY LAW, NEITHER JOHN DEERE NOR ANY COMPANY AFFILIATED WITH IT MAKES ANY WARRANTIES, REPRESENTATIONS, CONDITIONS OR PROMISES RESPECTING THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE AND COVERED BY THIS WARRANTY OTHER THAN THOSE LISTED ABOVE. THIS EXCLUSION INCLUDES FUNDAMENTAL TERMS, REPRESENTATIONS, CONDITIONS AND WARRANTIES WHICH MAY BE EXPRESSED OR IMPLIED, VERBAL OR OTHERWISE, INCLUDING IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES OF MERCHANTABILITY AND FITNESS, WHETHER PURSUANT TO THE SALE OF GOODS ACT OR ANY OTHER STATUTE OF ANY PROVINCE OR OTHERWISE, EXCEPT WHERE SUCH IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES MAY NOT BE EXCLUDED BY LAW.

F. REMEDIES EXCLUSIVE - THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE ARE THOSE SET FORTH IN THIS WARRANTY EXCEPT FOR THOSE REMEDIES PROVIDED BY LAW WHICH MAY NOT BE EXCLUDED. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR INJURIES OR BE LIABLE FOR DAMAGES SUFFERED BY THE PURCHASER AS A RESULT OF FUNDAMENTAL BREACHES OF CONTRACT OR BREACHES OF FUNDAMENTAL TERMS. The limitations of liability contained in this warranty shall only be effective to the extent permitted by law. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

G. NO DEALER WARRANTY - EXCEPT FOR WARRANTIES WHICH MAY NOT BE EXCLUDED BY LAW, THE SELLING DEALER MAKES NO WARRANTY OF ITS OWN AND THE SELLING DEALER HAS NO AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISE ON BEHALF OF JOHN DEERE, OR TO MODIFY THE TERMS OR LIMITATIONS OF THIS WARRANTY IN ANY WAY.

H. FAILURE DUE TO IMPROPER SET-UP IS NOT COVERED UNDER WARRANTY.

I. If further information is desired, contact a servicing dealer. For the location of servicing dealers in your area call 1-877-356-3698.

Tire Warranty

John Deere warranty applies for tires available through the John Deere parts system. For tires not available through the John Deere parts system, the tire manufacturer's warranty applicable to your machine may not apply outside the U.S. (See your John Deere dealer for specific information.)

WARRANTY

Limited Engine Warranty

FEDERAL AND CALIFORNIA EMISSION CONTROL DEFECTS WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The United States Environmental Protection Agency (EPA), the California Air Resources Board (CARB) and Deere & Company (John Deere) are pleased to explain the emission control system warranty on your 1995 and later utility or lawn and garden equipment engine. In California new utility and lawn and garden equipment engines must be designed, built and equipped to meet the State's stringent anti-smog standards. In other states, new 1997 and later model year equipment engines must be designed, built and equipped, at the time of sale, to meet the U.S. EPA regulations for small non-road engines. The engine must be free from defects in materials and workmanship which cause it to fail to conform with U.S. EPA standards for the first two years of engine use from the date of sale to the ultimate purchaser. John Deere must warrant the emission control system on your utility or lawn and garden equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your utility or lawn and garden equipment engine.

Your emission control system may include parts such as the carburetor or fuel-injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors and other emission related assemblies.

Where a warrantable condition exists, John Deere will repair your utility or lawn and garden equipment engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

In California, the 1995 and later utility and lawn and garden equipment engines are warranted for two years. In other states, 1997 and later model year equipment engines are warranted for two years. If any emission related part on your engine is defective, the part will be repaired or replaced by John Deere.

OWNER'S WARRANTY RESPONSIBILITIES

As the utility or lawn and garden equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. John Deere recommends that you retain all receipts covering maintenance on your utility or lawn and garden equipment engine, but John Deere cannot deny warranty solely for lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the utility or lawn and garden equipment engine owner, you should however be aware that John Deere may deny you warranty coverage if your utility or lawn and garden equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your utility or lawn and garden equipment engine to an authorized John Deere Commercial and Consumer Equipment Retailer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact your John Deere Commercial and Consumer Equipment Retailer, or the John Deere Customer Communications Center, 1-800-537-8233.

JOHN DEERE EMISSION CONTROL SYSTEM WARRANTY COVERAGE

LENGTH OF WARRANTY COVERAGE

John Deere warrants to the initial owner and each subsequent purchaser that the lawn and garden

WARRANTY

equipment engine is:

- Designed, built and equipped so as to conform with all applicable regulations adopted by the California Air Resources Board (CARB) pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code for 1995 and later equipment engines, and all applicable regulations of the United States Environmental Protection Agency (EPA) for 1997 and later equipment engines; and
- Free from defects in materials and workmanship which can cause the failure of an emission warranted part for a period of two years after the engine is delivered to the initial retail purchaser. John Deere is liable for damages to other engine components caused by the failure of a warranted part during the warranty period. If any emission related part on your engine is defective, the part will be repaired or replaced by John Deere.

WARRANTED PARTS

Coverage under this warranty extends only to the parts listed below (the emission control system parts) to the extent these parts were present on the engine purchased.

Fuel Metering System:	Fuel Metering System: Carburetor and internal parts (or fuel injection system). Cold start enrichment system. Air/fuel ratio feedback and control system.
Air Induction System:	Air Cleaner Controlled hot air intake system. Intake manifold.
Particulate Controls:	Traps, filters, precipitators, and any other device used to capture particulate emissions.
Exhaust Gas Recirculation (EGR) System:	EGR valve body and carburetor spacer if applicable. EGR rate feedback and control system.
Ignition System:	Spark plugs. Magneto or electronic ignition system. Spark advance/retard system.
Air Injection System:	Air pump or pulse valve. Valves affecting distribution of flow. Distribution manifold.
Catalyst or Thermal Reactor System:	Catalytic converter. Thermal reactor. Exhaust manifold.

WARRANTY

Miscellaneous Items Used in Above Systems	Vacuum, temperature, and time sensitive valves and switches.
	Electronic controls.
	Hoses, belts, connectors, and assemblies.

Since emission related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

WARRANTY SERVICE AND CHARGES

Warranty service shall be provided during customary business hours at any authorized John Deere Commercial and Consumer Equipment Retailer located within the United States of America. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized John Deere Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of John Deere.

MAINTENANCE WARRANTY COVERAGE

- a) Any warranted part which is not scheduled for replacement as required maintenance shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.
- b) Any warranted part which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.
- c) Any warranted part which is scheduled for replacement as required maintenance shall be warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any such part repaired or replaced under the warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for that part.
- d) Normal maintenance, replacement or repair of emission control devices and systems, which are being done at the customers expense, may be performed by any repair establishment or individual; however, warranty repairs must be performed by an authorized John Deere Commercial and Consumer Equipment Retailer.
- e) Any replacement part that is equivalent in performance and durability may be used in the performance of any non-warranty maintenance or repairs, and shall not reduce the warranty obligations of John Deere.

CONSEQUENTIAL WARRANTY COVERAGE

Warranty coverage shall extend to the failure of any engine components caused by the failure of any warranted part still under warranty.

LIMITATIONS

This Emission Control System Warranty shall NOT cover any of the following:

- a) Repair or replacement required as a result of (i) misuse or neglect, (ii) improper maintenance or unapproved modifications, (iii) repairs improperly performed or replacements improperly installed, (iv) use of replacement parts or accessories not conforming to John Deere specifications which adversely affect performance and/or durability, (v) alterations or modifications not recommended or approved in writing by John Deere.

WARRANTY

- b) Replacement parts, other services and adjustments necessary for normal maintenance.
- c) Transportation to and from the John Deere Commercial and Consumer Equipment Retailer, or service calls made by the Retailer.

LIMITED LIABILITY

- a) The liability of John Deere under this Emission Control System Warranty is limited solely to the remedying of defects in materials or workmanship. This warranty does not cover inconvenience or loss of use of the utility or lawn and garden equipment engine or transportation of the engine to or from the John Deere Commercial and Consumer Equipment Retailer. JOHN DEERE SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS, OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL (EXCEPT AS LISTED ABOVE UNDER "COVERAGE") OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE UTILITY OR LAWN AND GARDEN ENGINE FOR ANY OTHER PURPOSE.
- b) NO EXPRESS EMISSION CONTROL SYSTEM WARRANTY IS GIVEN BY JOHN DEERE WITH RESPECT TO THE ENGINE EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSION CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSION CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.
- c) No dealer is authorized to modify this Federal, California and John Deere Emission Control System Warranty.

LEGAL RIGHTS

This Warranty gives you specific legal rights. You may also have other rights in the State of California for 1995 and later equipment engines and in other states for 1997 and later equipment engines.

THIS FEDERAL AND CALIFORNIA EMISSION CONTROL SYSTEM WARRANTY IS IN ADDITION TO THE JOHN DEERE LIMITED ENGINE WARRANTY.

Limited Battery Warranty

NOTE: Applicable in North America only.

TO SECURE WARRANTY SERVICE

The purchaser must request warranty service from a John Deere dealer authorized to sell John Deere batteries, and present the battery to the dealer with the top cover plate codes intact.

FREE REPLACEMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within 90 days of purchase will be replaced free of charge. Installation costs will be covered by warranty if (1) the unserviceable battery was installed by a John Deere factory or dealer, (2) failure occurs within 90 days of purchase, and (3) the replacement battery is installed by a John Deere dealer.

PRO RATA ADJUSTMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship more than 90 days after purchase, but before the expiration of the applicable adjustment period, will be replaced upon payment of the battery's current list price less a pro rata credit for unused months of service. The applicable adjustment period is determined from the Warranty Code printed at

WARRANTY

the top of the battery and chart below. Installation costs are not covered by warranty after 90 days from the date of purchase.

THIS WARRANTY DOES NOT COVER

- A. Breakage of the container, cover, or terminals.
- B. Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.
- C. Transportation, mailing, or service call charges for warranty service.

LIMITATION OF IMPLIED WARRANTIES AND PURCHASER'S REMEDIES

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

NO DEALER WARRANTY

The selling dealer makes no warranty of its own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

PRO RATA MONTHS OF ADJUSTMENT

NOTE: If your battery is not labeled with a warranty code, it is a warranty code "B".

Warranty Code	Warranty Period
A	40 Months
B	36 Months
C	24 Months

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SCOTTS SERVICE LITERATURE

Order Form

John Deere Distribution Center - Department S/P P.O. Box 186, Moline, IL 61266-0186

To order these publications, call 1-800-522-7448. If you want manuals or catalogs for equipment not shown on this list, provide the model number, serial number, and name of the product when you call. Make checks payable to John Deere.

Name _____

Address _____

City _____

State _____

Zip _____ Phone: () _____

Title	Number	Price	Qty	Total
Parts Catalog - S2048	PC2741	(Call 1-800-522-7448 for current prices.)		
Parts Catalog - S2554	PC2742			
Operator's Manual	OM141709			
Technical Manual	TM1777			
Sub-total				
State Sales Tax (Illinois & Iowa only)				
Shipping & Handling				
Total				
Method of Payment				
<input type="checkbox"/> Check/Money Order Enclosed				
<input type="checkbox"/> John Deere Credit Card				
<input type="checkbox"/> MasterCard				
<input type="checkbox"/> Visa				
<input type="checkbox"/> American Express				
<input type="checkbox"/> Discover				
<input type="checkbox"/> Farm Plan				
Credit Card Acct. No. (13 or 16 digits)		Expiration Date:		Signature:
_____ - _____ - _____ - _____		_____		_____

NOTES

INVESTMENT IN QUALITY

Please do not return this tractor to the store where you purchased it.

Your Scotts tractor, designed and built by John Deere, is more than just a purchase, it's an investment in quality. That quality goes beyond our equipment to your dealer's parts and service support.

That's why John Deere has initiated a process to handle your questions or problems, should they arise. If you have questions or problems with your new tractor, please follow the steps below. To locate your nearest authorized Scotts servicing dealer, please call toll free 1-877-864-2295.



Step 1

Refer to your operator's manual

- A. It has many illustrations and detailed information on the safe and proper operation of your equipment.
- B. It gives troubleshooting procedures, and specification information.
- C. It gives ordering information for parts catalogs, service and technical manuals.
- D. If your questions are not answered in the operator's manual, then go to Step 2.

Step 2

Contact your dealer

- A. Your authorized Scotts servicing dealer has the responsibility, authority, and ability to answer questions, resolve problems, and fulfill your parts and service needs.
- B. First, discuss your questions or problems with your dealer's trained parts and service staff.
- C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner.
- D. If your questions or problems are not resolved by the dealer, then go to Step 3.

Step 3

Call the Customer Communications Center

- A. Your authorized Scotts servicing dealer is the most efficient source in addressing any concern, but if you are not able to resolve your problem after checking your operator's manual and contacting your dealer, call the Customer Communications Center.
- B. For prompt, effective service, please have the following ready before you call:
 - The name of the dealer with whom you've been working.
 - Your equipment model number.
 - Number of hours on machine (if applicable).
- C. Then call 1-877-864-2295 and our advisor will work with your dealer to investigate your concern.